PRODUCTS finishing

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FRED W. VOGEL, *Editor*
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ROBERT I. SHORE
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Consulting Editors
BRYANT W. POCOCK
H. LEROY BEAVER

Contributing Editor
C. B. F. YOUNG

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METAL CLEANER DEPARTMENT

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Products finishing

Fire Extinguishers

A fire extinguisher is something with which to put out fires. Disregarding its other purpose (that of being something to bump one's head on), this presupposes that when the time comes to use it, it will work.

In order for it to work, a person must (1) know where it is, and (2) know how to operate it. If he hasn't humped his head on it recently, he may have forgotten its location. If he has never actually used it, he may have to learn how "with the utmost efficiency and dispatch." If, after finding it and completing what was probably the most rapid learning process of his career thus far, he finds that the extinguisher is practically empty, he may indeed be pardoned the desperate utterance of a soul-rendering "Oh, pshaw!"

A fire extinguisher plus a man constitutes a miniature fire department. The combination should be expected to perform as efficiently as its more grandiose counterpart, only on a smaller scale. How efficiently would a fire department function if the boys mislaid the keys to the truck, failed to bring the hose along, or forgot who was supposed to locate and turn on the hydrant?

There are many kinds of fire extinguishers, all good, and each suitable for a particular kind of fire. The proper type should be permanently installed in a convenient location and kept filled at all times. Every person appearing regularly on the premises should be informed of its location and instructed in its use. Extinguishers should be inspected periodically to detect tampering by firebugs. If these simple precautions are followed, the incidence of disastrous fires in our shops will be greatly reduced.

Practice Makes Perfect In Bombing and Finishing!

By GORDON H. ROBERTSON

Industrial Finishes Division, The Sherwin-Williams Company

RECENT dispatches from the war front tell a familiar story of the amazing accuracy of United States bombardiers. Part of the credit goes to the development of such devices as the famed Norden bombsight. Yet even the most "human" machine devised requires skill on the operator's part. The greater that skill the more remarkable will be the machine's performance. Long before a bombardier aims a high-explosive bomb at a real target, he has dropped hundreds of practice bombs from a height of several thousand feet into a marked circle a few feet wide. Later, when he flies through a hail of flak to reach his target, he has the satisfaction of knowing that the lessons learned while dropping "dummy" bombs apply equally as well when he is aiming real bombs.

The production of practice bombs, therefore, implies a serious responsibility. Practice bombs must be fabricated in such a manner as to reproduce the action of a high-explosive bomb in every detail. Then, too, for every high-explosive dropped over an enemy target, there must be anywhere from 25 to 100 practice

Fig. 1 — Seam Welding Body Section of a Practice Bomb at Chicago Plant of Rheem Manufacturing Company. Perforated Sheets Have Previously Been Spot-Welded in Four Places to Facilitate Seam Welding

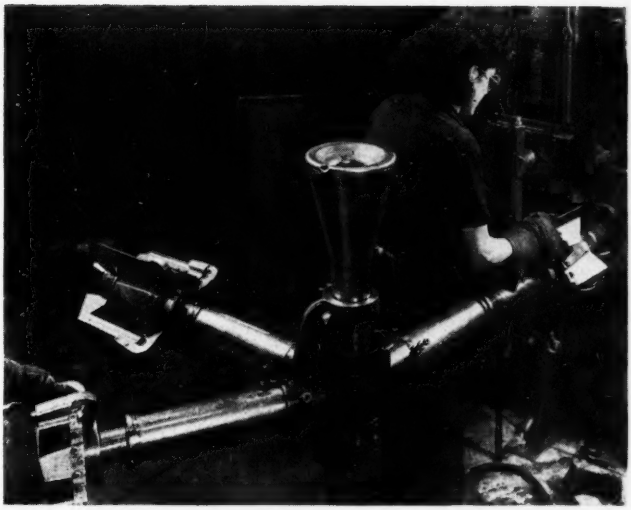


Fig. 2—Three - Armed Jig Used to Assemble Tail Fins for Practice Bombs. Operator at Right is Spot Welding Fins in Correct Alignment

bombs consumed during the bombardiers training. This requires that production facilities combine high-speed with accuracy. Briefly, these were the two major problems facing the Rheem Manufacturing Company of Chicago, Ill., when Army Ordnance assigned it a contract for hundreds of thousands of practice bombs.

A considerable number of years spent in metal drum fabrication gave the company a large backlog of experience upon which to draw. Ordnance specifications called for welded bomb case, sturdy enough to support the 100 lb. weight of the finished bomb and a complicated tail fin assembly where tolerances were extremely close. Daily output requirements were high, finish specifications rigid, and every completed bomb was subjected to close inspection. How it was able to do so makes an interesting case history of the application of modern, high speed fabricating and finishing tools that should contribute immensely to postwar industrial efficiency.

The entire bomb is made of 22 gauge S.A.E. No. WD-1010 sheet steel, with the exception of the nose section which is 18 gauge steel and the carrying lugs which are $\frac{5}{16}$-inch steel rods. The unit is broken down into four assemblies; nose, body cone or sleeve, and tail fins. An opening in the bomb neck, immediately following the tail fin, holds a small explosive charge which, along with the weight charge (usually sand), is inserted at the training center. In operation, the practice bomb weighs 100 lb. and is equipped with a detonating fuse and arming wire. The nose is cold drawn in three operations, using a soluble oil lubricant. The lip of the nose is fitted for insertion into the bomb body. Sheets for the body are preformed on a roll press and holes for lugs punched. The formed sheet is spot welded in four places to facilitate the seam weld which follows. The neck is formed by stamping the piece, preforming, spot welding, and seam welding. The fin assembly presented a complicated problem of aligning numerous pieces during spot welding. A three-armed jig was designed to hold the pieces while they were being spot welded in place. More than any other feature of the entire fabricating process, this tail fin jig contributed to greater output.

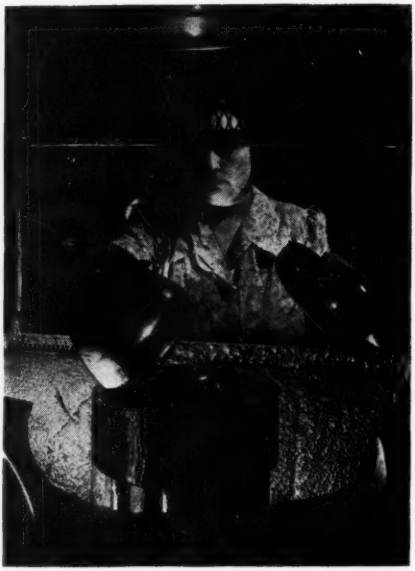


Fig. 3—Forming Nose of Practice Bomb. This is the Final Drawing Operation

When the bomb nose, body, neck, and tail fin are assembled, the unit is mounted on an overhead monorail conveyor and is not removed or handled until ready for identification and packaging. Finish specification calls for a synthetic lacquer which dries to the touch within 45 seconds under forced drying. At the Rheem plant, practice bombs are finished entirely automatically. After the bomb passes through a washing machine and surface grease, oil, and dirt are removed with an alkaline wash, it moves in front of a water-wash paint spray booth. Each bomb, as it passes, breaks a photoelectric cell circuit and actuates a battery of spray nozzles, arranged so that every exposed surface is coated with Sherwin-Williams specification finish. The operation requires only occasional inspection of the nozzles to prevent clogging. Ordnance specifications call for one coat of finish. The bomb then moves into an infra-red drying oven where its finish is baked hard and dry.

Accurate control of the finish quality depends on many factors. Proper thinning, for example, is essential if the finish is to dry hard and evenly during its limited stay in the infra-red oven. Too thin a consistency may result in running and the formation of an uneven coating. Too heavy a consistency results in constant clogging of the nozzles. From a performance viewpoint, the finish must show a high resistance to abrasion. The presence of only one coating might, if the finish surface were soft and adhesion poor, permit corrosion of the unprotected steel surface. The Rheem

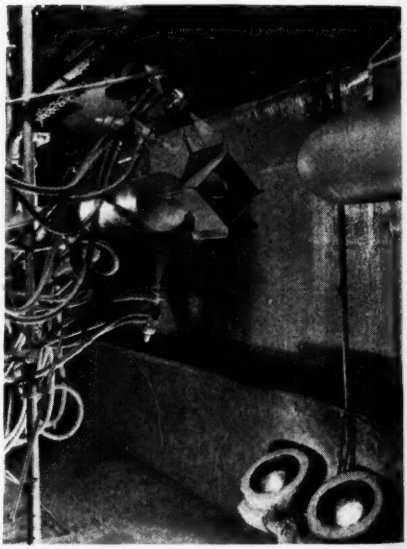
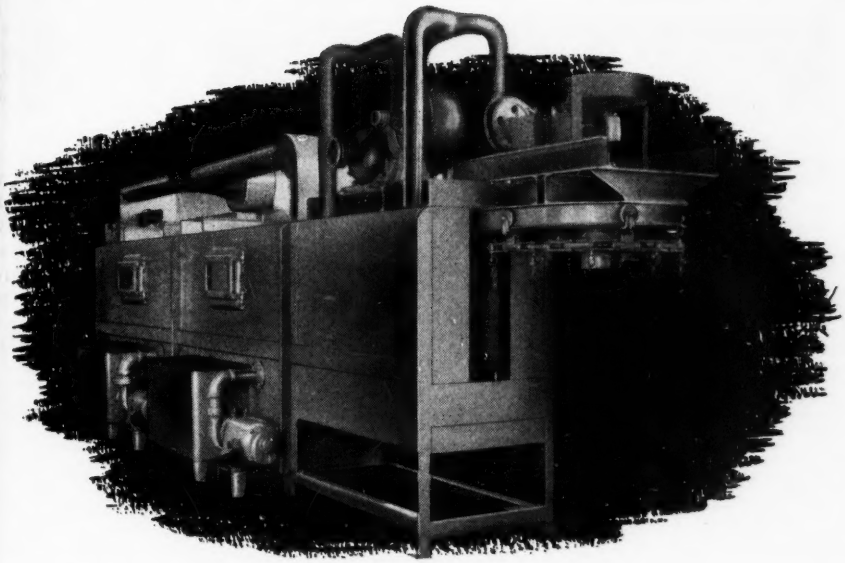


Fig. 4—Practice Bombs are Finished by Passing Them through a Booth Equipped with Automatically-Operated Spray Nozzles. The Nozzles are Actuated by Photoelectric Cells Located at the Lower Right. One Coat of "Sherwin-Williams Specification" Bomb Finish is Applied



A *Clean* Start...

---a *Clean* Finish!

THIS A-F Cleaning Machine consists of wash, rinse and dry units for cleaning incendiary bombs. Actually, it will thoro-clean and *speed*-dry any metal product with a 1 ft. x 2½ ft. clearance. A vent system draws out all vapors from wash and rinse sections. The machine can be equipped with swivel carriers to revolve the work while passing through spray and dry sections.

The metal parts and products YOU manufacture can be cleaned *more efficiently* and *economically* in this machine, one of our "standard" machines or in an especially designed piece of A-F equipment. Write today for folders describing A-F Standard and Custom-Built Cleaning and Finishing Equipment or for a frank discussion with an A-F Engineer.

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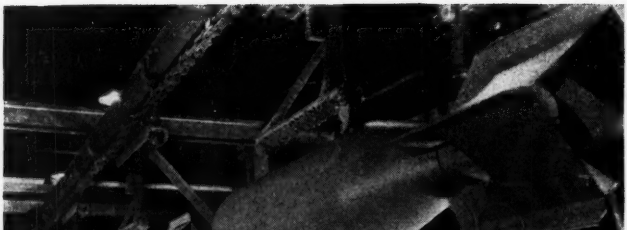

Fig. 5—After Leaving the Spray Booth, the Bombs Pass Through a Drying Booth equipped with Infra - Red Lamps which Dry the Finish Quickly and Thoroughly

organization conducted numerous experiments before their present efficient finishing system was devised.

Very shortly after the bombs leave the drying tunnel, they are removed from the monorail conveyor for marking and packaging. A white identification paint, specially developed by The Sherwin-Williams Company, is applied with a rubber stencil. The final operation consists of equipping each bomb with an arming wire and packaging in corrugated containers for shipment to air force training centers.

(All Illustrations Courtesy Sherwin-Williams Company)

Fig. 6—Identification Symbols are Applied to the Finished Bombs by Rolling the Bomb over a Rubber Plate to which Stencil White has been Applied. The Bombs are then Equipped with Arming Wires and Packed for Shipment

FOR THE FIGHTERS OF TODAY AND THE FLAGSHIPS OF TOMORROW

Another tough cleaning problem solved by "THE PENN SALT MAN!"

THE aircraft industry has offered some of the toughest metal cleaning and plating problems in war production plants. It has been our privilege to be helpful through our products and our men in the solution of many such problems. Both the men and the products of Penn Salt's Special Chemicals Division are prepared not only for these war-time services but are equally well prepared for reconversion and the problems of the future.

Here is an actual case of a leading aircraft engine manufacturer, drawn from our files:

BEARINGS
(AIRCRAFT)

PRODUCTS USED: PENNSALT CLEANERS EC-10, No. 37, and K-7 BEFORE LEAD PLATING WITH PENNSALT LF-42

PROBLEM: To remove slushing oil from copper-lead alloy and silver plated steel bearings prior to lead plating.

EQUIPMENT: Plating done in individual pyrex glass plating tanks, large enough to accommodate one bearing. Conventional soak and electrolytic cleaning tanks.

OUR METHOD:
1. Preclean with Pennsalt EC-10 (solvent dip) followed by spray water rinse.
2. Soak clean in Pennsalt #37, 6 oz/gal., 5 to 10 minutes, 190 to 200°F.
3. Hot water rinse.
4. Electroclean in Pennsalt K-7, 8 oz/gal., 190°F., 15 to 30 seconds —work made the cathode.
5. Hot water rinse.
6. Lead plating solution made up of one part Pennsalt LF-42 to two and one-half parts water—with glue addition. Used at room temperature, 15 amps./sq. ft., for 28 minutes, which plates .001" thickness.
7. Cold water rinse.
8. Cyanide dip.
9. Indium plate.

COMMENTS: This cycle employs four Pennsalt Products.

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By H. W. MORTON
Manager, Decal Division,
Coleman Lamp and Stove Company
Wichita, Kansas

ONE day in making a call on a large appliance plant regarding the use of decals for instruction markings on a piece of war equipment, the finishing foreman explained during the discussion that the only types of decals he knew of were ones that were put on with varnish and were a "bear" to apply, requiring a long time and then most of them falling off in a short while. Stories like this come out every so often and leads us to believe that a great many firms, engineers, finishers, and purchasers have not acquainted themselves with the modern decal. Part of the blame is due the decal industry in taking for granted that everyone knows what a decal is and what it will do.

Before the war, decals were widely used for trade name markings, advertising pieces on store windows and doors, and hundreds of other uses However, it was the same kind of decal that had been in use for many years and which required many weeks to obtain after placing an order.

The war has changed this. Now, a customer can get delivery in two to three weeks, does not have to buy an extremely large quantity to keep the cost down to an economical figure to fit into production use, and can purchase a decal to fit his needs which will

adhere permanently to any type of surface, including plastics, leather, glass, all types of painted surfaces, and all types of metal surfaces such as unfinished polished aluminum, stainless steel, wrinkle finishes, and so on. In addition, the decal can be applied quickly on the production line with either inexperienced or experienced labor. No longer does the decal have to be handled with "kid gloves" in its application.

A great many million decals were used in 1944 in the aircraft industry alone for markings on all types of planes. These included small anti-sabotage decals, instrument panel markings, fuse panel markings, cable color code markings, instruction and warning markings on through to the large star insignia which appears on every ship. In addition to aircraft markings, millions more were used on other types of war materials and these decals were applied **permanently** to almost every type of surface.

A number of years before the war, a certain manufacturer was having considerable trouble with decals and had tried a number of makes to secure one that would apply to his products for name and instruction markings and that would adhere permanently. The requirement at the time was difficult in that some of the decals had to go on tanks that had bronze finishes and in use these tanks became hot and in filling had gasoline spilled over them and also were subjected to a continued scuffing. The decals had to be gasoline and alcohol-proof, withstand heat and moisture, and, on certain of the products, had to withstand elements of weather and hard use. A satisfactory decal to meet all these requirements could not be obtained so the manufacturer set out to develop one for his own use. On top of this, he had to have one

View of a section of the aircraft insignia production department of the Coleman Lamp & Stove Company. In this department, a decal can be made up to 55 x 55 inches in one piece due to the use of 100 per cent synthetic enamels.

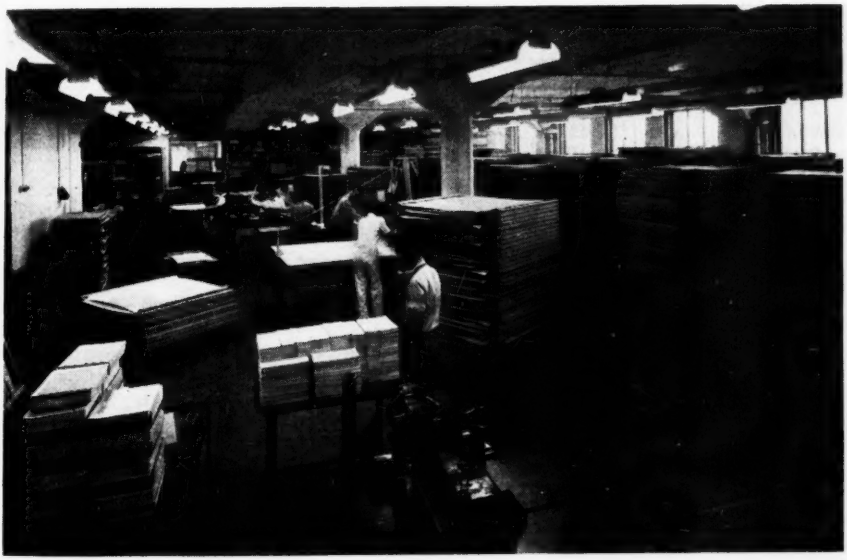


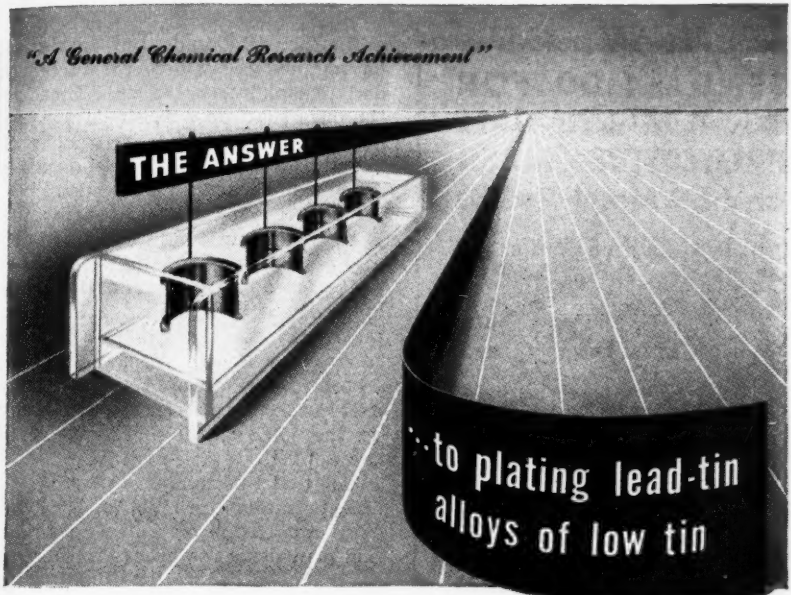
Illustration depicting the production of aircraft markings in the Decal Division of Coleman Lamp & Stove Company. Women are used extensively in the manufacture of small type markings made by the screen process method using all synthetic enamels for maximum durability and permanency.

that would apply quickly and set fast so that the appliance could be packed a few minutes after the decal was applied without disturbing the decal.

After considerable work, a decal was developed that would meet all these requirements and was solvent applied. After starting to use this new type of decal in his own plant with great success, word got around to some of the oil companies who were also looking for a similar decal for use in service stations, and the manufacturer under discussion was asked to make some for them. He agreed at first to use this as fill in business during his own production. With the outbreak of war, large quantities of decals were required as a result of the sudden vast aircraft production program. To meet this demand, the firm began producing decals on a large volume basis.

In addition to meeting this production demand, the manufacturer also undertook further work to develop new types of decals which were applicable to the varied number of surfaces and finishes on aircraft, such as polished aluminum and stainless steel surfaces, as well as surfaces subject to engine heat, expansion and contraction between ground and high altitudes, weather exposure, salt water exposure, and so on.

War developments in decals will net many improvements and uses for the postwar world. Decals can be applied to almost any type of surface, are practical for decoration, and can be produced in any size or shape and any number of colors. Line drawings or halftone reproductions can be used. In addition, a decal can be made applied and baked to the surface. Desks and office furniture are often finished in this manner.



For more than 25 years metal finishers have sought a successful means of plating lead-tin alloys in the low tin ranges. "Not feasible . . . inoperable . . . too many variables," read published reports on method after method.

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Here's how: General Chemical *Lead* and *Tin Fluoborate solutions* are thoroughly compatible. Combined in baths using dual or alloy anodes, they plate dense, fine-grained lead-tin alloy deposits uniformly, simultaneously, and *with the tin easily controlled at low ranges!*

Thus, *in one operation* an alloy coating is produced that is harder, more wear-resistant, and has a more attractive appearance than lead plate alone. Little wonder that leaders in the bearing industry are adopting the combination fluoborate bath for lead-tin alloy plating of their products!

"First in Fluorides" For working samples of General Chemical's Lead, Tin, or other fluoborate solutions—for sound, practical information on their applications, based on the research and "know how" of America's foremost producer of fluorine compounds—contact the nearest General Chemical Sales and Technical Service Office or write General Chemical Fluorine Division, 40 Rector Street, New York 6, N. Y.

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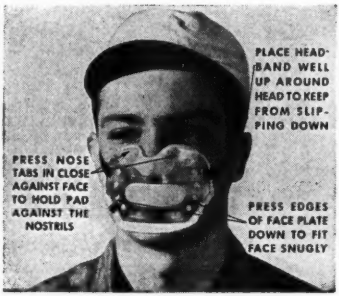
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Another development of the war and having postwar value is the fluorescent and phosphorescent decal. These are the ones that glow in the dark. In the postwar era they can be used in the novelty field and will also be useful for danger and warning markings.

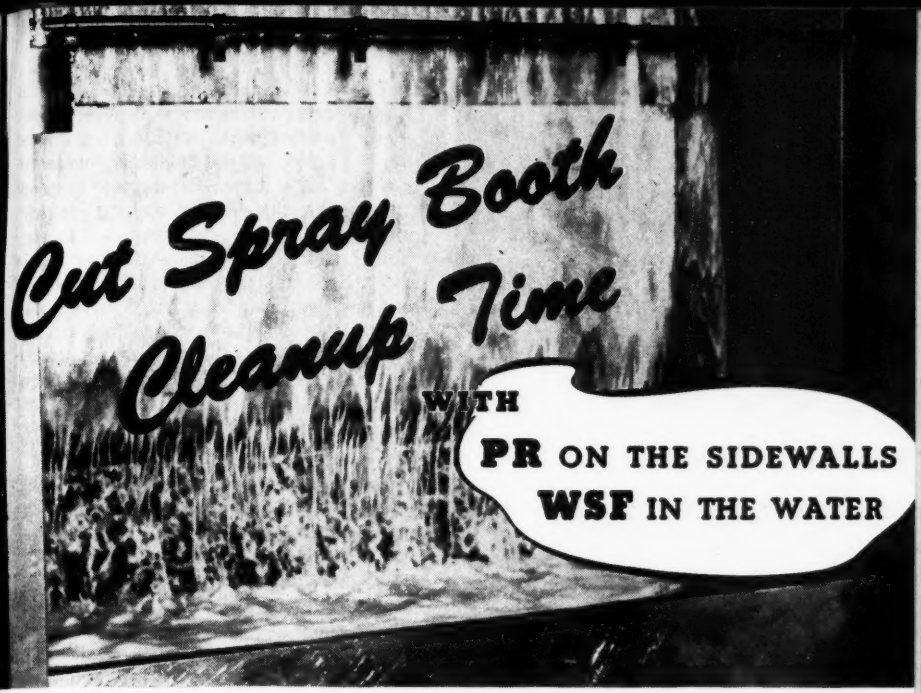
Due to the number of uses for decals in the manufacturing field, it might be well for the finishing engineer to study the different types, such as the water-applied, alcohol - applied, solvent - applied, and the varnish-applied decals. In this way, he can select the type best suited for the use at hand. Too many users order decals and expect them to do the job regardless of where they are applied.

The decal of today is a tough, durable, permanent product made for fast, easy application on a production line, and provides a foolproof and economical means of decoration, identification, instruction, or marking of products.

Optimus Detergents. The Optimus Detergent Co., 132 Church St., Matawan, N. J., has issued a four-page bulletin announcing a line of industrial metal cleaning materials designed to cover a wide range of specific applications. Metal cleaning materials announced are available in alkaline, acidic, solvent, and emulsion types. Copy of Bulletin 4D1 free upon request.

Goodrich Protective Coatings. A six-page broadside on Koroseal Tape RX and MX and Korolac RX easy-to-apply protective coatings for plating racks and masking work has been published by the B. F. Goodrich Co., Akron, Ohio. The broadside describes the composition of Koroseal and outlines some of the versatile forms in which it is used in the industrial field.

Advantages of Koroseal Tape MX and Korolac RX, Koroseal in solution, in resisting acids and alkalies in plating rack service are discussed and methods of application presented. The broadside also explains the functions of Koroseal Tape MX in masking work. Copy free upon request.



The combination of Triad PR and Triad WSF brings new operating economy to water-wash spray booth—cuts maintenance costs and down-time to the minimum. Here's why:

TRIAD PR

FOR SIDEWALL PROTECTION

This new protective coating for the dry sidewalls permits easy removal of accumulated paint overspray—cuts cleanup time to minutes. It's readily applied with brush or spray gun; gives excellent coverage. It dries to a hard, white, dustless coating which improves visibility in the booth. And it's quickly flushed off with water or steam carrying all surface deposits with it.

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A small amount of Triad WSF in the water prevents fouling or plugging of the lines, nozzles and other vital working parts by accumulated paint overspray. The paint collected by the water is made non-tacky and may be floated in the sludge tank. Since only a low concentration is required, there's no excessive foaming and Triad WSF is economical to use.

GUARANTEED PERFORMANCE: Like all Triad alkali cleaning compounds, PR and WSF are shipped on a guaranteed performance basis for thorough testing in your equipment.

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Eliminating the Old Steel Hot Plate Dryer, 3

By WALLACE G. IMHOFF
President,
The Wallace G. Imhoff Company,
Vineland, New Jersey

In this final article in the series on the subject of hot-dip galvanizing, the function of the liquid flux technique is discussed in detail, including equipment required in employing same.

AS is the case many times, new methods and equipment for performing certain jobs are tried but because of the lack of a thorough understanding of the requirements, the desired results are not obtained. And the operators, due to the fact that the methods and equipment and the ideas involved in using same are not explained to them in detail, show little interest other than going through the mechanical motions of operating the process like robots. Two very vital factors are involved in attempting to put across new ideas in practice.

First, it must be fully explained how and why the new methods and equipment will be better than old routine methods and equipment. Secondly, the equipment and processes must be explained so carefully and in such detail that they will actually create interest, thus making the operators wanting to try them and see how they work. If this second element is not included, suspicion at once forms in the minds of the operators that here is something new that will be the cause of someone losing his job or it will mean a reduction in their pay or make them work harder. Suspicion is created by a lack of understanding and cooperation.

The New Technique of Fluxing and Drying Must Be Clearly Understood to Make It Work Successfully

Because of the many factors involved in employing the new liquid flux technique correctly, it has been tried and discarded in a number of cases. It can be readily understood that if the fluxing part of the technique is not followed correctly, the subsequent air drying part of the technique cannot be employed successfully. The second step of successful air drying depends upon the first step of employing the liquid fluxing correctly. The two operating techniques are really one but are di-

vided into separate parts or steps.

Operating Conditions for the Liquid Flux

The basic reason for using a liquid flux at all is to provide a temporary protection for the surface of the article between pickling and galvanizing operations so that there is no possible chance for any corrosion to occur after the article has been pickled clean and washed thoroughly to remove all traces of iron salt and acid in the pores. The surface must be preserved in exactly the same condition as when it is pickled perfectly clean.

It has been definitely shown how the old muriatic acid flux technique was in reality not an acid dip for fluxing but rather a medium for generating heavy iron salts to obtain such a saturation that when the salts dried over the surface, they retarded the corrosion caused by the air while the part was waiting to be placed in the galvanizing pot. It was not known or even remotely appreciated that this iron salt covering was continually carrying a steady supply of iron into the galvanizing bath to form dross. When it was finally proved that such a condition existed, a search was begun for a suitable material which would provide the same protection as the iron salts but which would not carry any iron or develop any iron when applied to the work as a flux dip covering to prevent corrosion after pickling.

It was a long, tedious task to piece together the fragments of practical knoweldge that were discovered before and while the actual research investigations were being conducted. However, a suitable material—zinc ammonium chloride — was finally found to take the place of the iron chloride. The muriatic acid dip flux was so firmly entrenched in the minds of most galvanizers employing the muriatic acid flux technique, the muriatic acid was considered the fluxing agent; it was not realized that the muriatic acid was only the generator of the iron chloride which was the real fluxing agent. Many picklers saved some of the old muriatic acid flux and put it in a newly made up muriatic acid flux dip "to make it work." An inexperienced pickler who did not do this found that his newly made up muriatic acid flux solution caused very serious rusting and corrosion when he first used it. Gradually, however, the extreme corrosion subsided and, finally, the new solution worked satisfactorily. The reason for this was that the new muriatic acid dissolved enough iron from the work to once again possess enough iron chloride (iron salts) to form a protective covering over the surface. The iron in the liquid form was carried over into the galvanizing bath to create large quantities of zinc-iron alloy (galvanizer's dross).

One of the principal factors retarding the introduction of the new liquid flux technique using zinc ammonium chloride was that up to this time it was standard practice in practically all hot-dip galvanizing plants to heat the pickling solutions with open steam lines. Great difficulties in employing the liquid flux technique were therefore encountered at first for two reasons: (1) the solution readily became diluted by condensed steam and, being too weak, corrosion and rusting of the work occured; (2) the prejudice in favor of the open steam lines made it almost impossible to convince the management that it must spend money (additional operating costs) to adopt a new method of heating the liquid flux solution which absolutely required closed steam coils for successful employment of the new flux technique.

As if all of these difficulties were not enough, the companies manufacturing the zinc ammonium chloride often varied the quality of the salts. The entire setup for employing the liq-

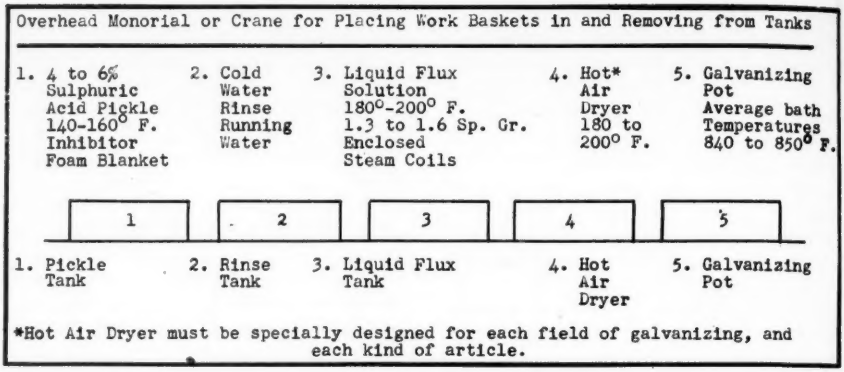
Overhead Monorial or Crane for Placing Work Baskets in and Removing from Tanks
1. 4 to 6% Sulphuric Acid Pickle 140-160° F. Inhibitor Foam Blanket
2. Cold Water Rinse Running Water
3. Liquid Flux Solution 180°-200° F. 1.3 to 1.6 Sp. Gr. Enclosed Steam Coils
4. Hot* Air Dryer 180 to 200° F.
5. Galvanizing Pot Average bath Temperatures 840 to 850° F.
1
2
3
4
5
1. Pickle Tank
2. Rinse Tank
3. Liquid Flux Tank
4. Hot Air Dryer
5. Galvanizing Pot
*Hot Air Dryer must be specially designed for each field of galvanizing, and each kind of article.

Fig. 1—Standard setup for employing liquid flux technique using zinc ammonium chloride in an enclosed coil-heated tank

uid flux technique was so delicate that a number of companies attempting to employ the technique failed to obtain satisfactory results for one reason or another and finally abandoned its use, going back to the old muriatic acid dip. Years passed before the correct conditions for employing the liquid flux technique had been discovered and standardized.

These conditions include the use of an acidproof brick, wood, or steel tank. The heating of the solution is accomplished with an enclosed coil which can be made of Monel metal, Everdur, or ordinary extra heavy wrought iron pipe. In order to keep from dissolving the metal from which the coil is made, one or two slabs of zinc are always kept hanging in the tank, usually one at each end.

Regarding the strength of the solution, the saturation with zinc ammonium chloride should be such that as soon as the work is removed from the liquid dip, the solution quickly dries over the surface of the work to an absolutely transparent, clear glaze, with the iron surface below black or gray as pickled and washed. The slightest sign of a green corrosion product or yellow or red rust or "sull" rust indicates one of two things—either the solution saturation is too low or the bath temperature is too low.

The proper bath temperature is between 180 and 200 deg. F. This temperature should be checked from time to time with scientific instruments. A practical thermometer for taking the temperature of the liquid flux solution is one having a cup at the base which the liquid fills when the thermometer is placed in the tank so as to permit an accurate temperature reading to be made with the temperature removed from the tank. The desired saturation of the solution is obtained by using a heavy liquids hydrometer. The correct saturation is between 1.300 and 1.600 specific gravity with a solution temperature of 180 to 200 deg. F. Attention is called to the fact that every time a basket of work is placed in the liquid flux solution and removed, zinc ammonium chloride salt is carried out in the form of a deposit over the surface of the work. Although this is as it should be, some operators do not realize that every day at least as much salt must be put into the tank as is taken out in order to maintain the proper saturation of the liquid flux solution.

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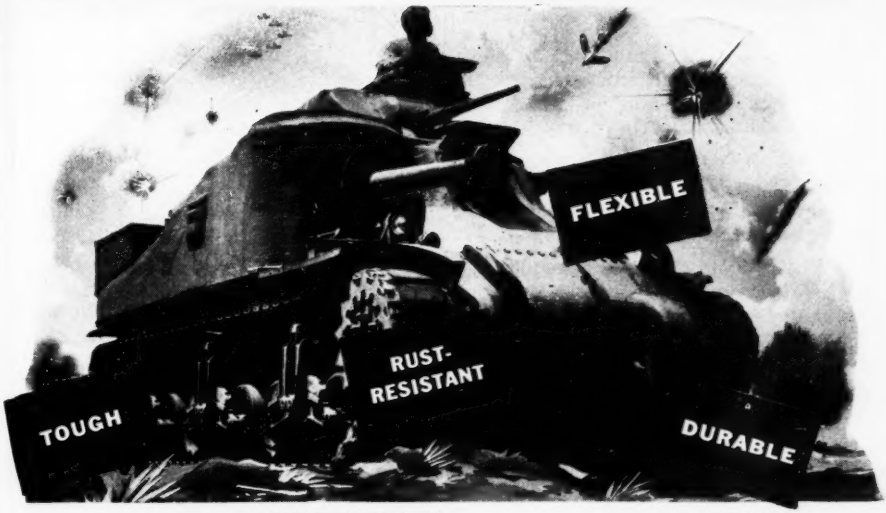

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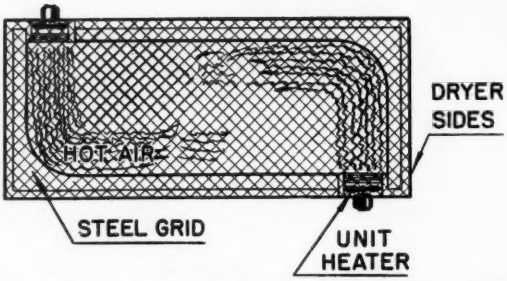


Fig. 2—Top view of dryer for articles of the larger type

Sequence of Operations

Figure 1 illustrates the sequence of operations when employing the liquid flux technique in conjunction with a hot air dryer. First, there is the standard pickling solution for steel or special strengths and kinds of pickles for malleable iron castings, and so on. When the work is being pickled, a good commercial inhibitor should be used and also a foam blanket material. After the work is thoroughly pickled, the basket is raised by an overhead hoist on a monorail or crane and lowered down into a clean running rinse water tank. After the work is thoroughly rinsed, it is lowered into the liquid flux solution which is maintained at a temperature between 180 and 200 deg. F. and has a saturation between 1.300 and 1.600 specific gravity.

It is extremely important that the basket remains at least five minutes in the liquid flux solution for the purpose of allowing sufficient time for a chemical reaction to take place in fluxing the surface of the material. When the work is removed from the solution and comes in contact with the air, the flux on the surface quickly dries to a clear, transparent glaze, thus completely protecting the surface of the work against the action of the air which otherwise would form a green, light yellow, or sull. rust corrision over the surface. The gray or black surface, just as pickled, is seen below the glaze.

Hot Air Drying Versus the Old Steel Hot Plate Dryer

The old steel hot plate dryer does not have to be described to any galvanizer. Practically all such men have seen the steam rising from the work on the dryer, watched the green corrosion quickly form over the work on the top of the pile, observed the yellow and brown rust form on the work in the pile, and watched the heavy rust burn its way onto the surface of the work directly against the hot plate. Little wonder that the work spattered when placed in the galvanizing bath and required a long submersion time in the bath to dissolve off or reduce the rust, and a very large percentage of the articles had black spots, bare and exposed steel areas.

Hot Air Dryer—A New Idea

The author conceived the idea of eliminating the steel hot plate dryer considerably over a year ago, and, as far as is known, there are no hot air dryers in use at present. Each field of

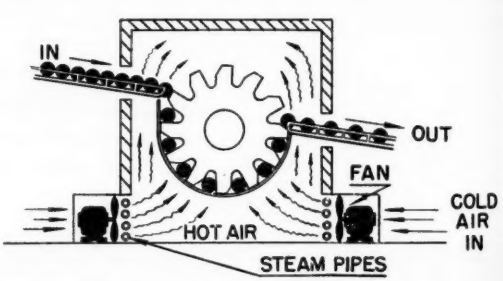
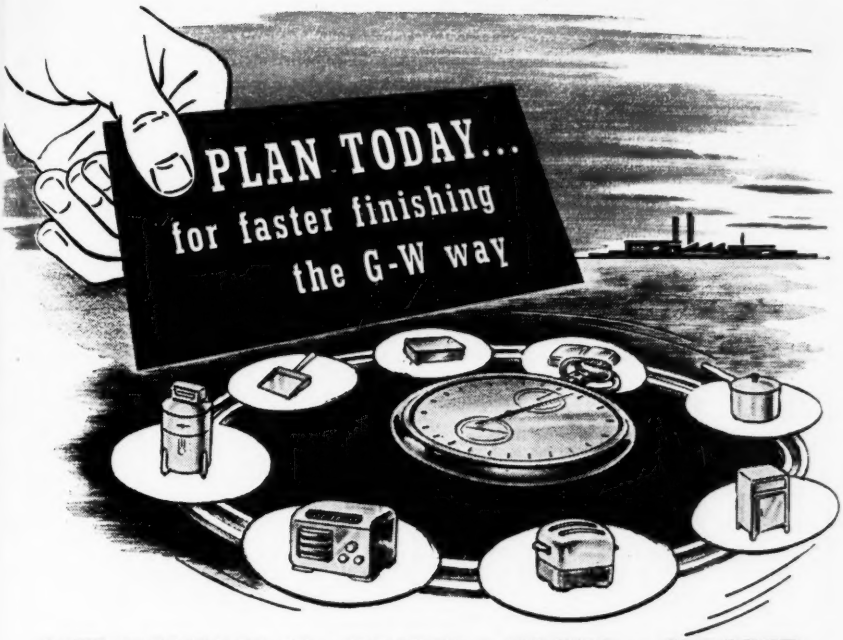


Fig. 3—Cross-sectional view of hot air continuous type dryer



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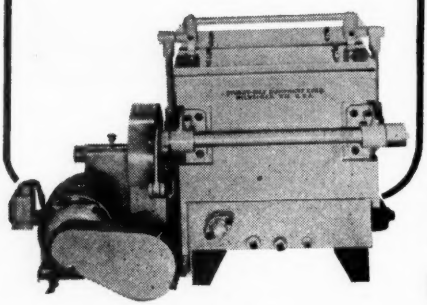


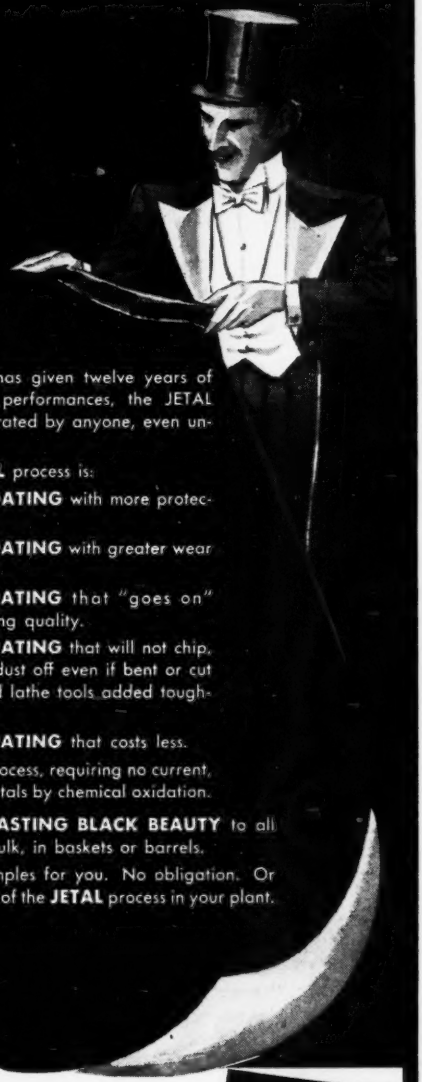
galvanizing requires its own special design of dryer, and, as with the liquid flux technique, the hot air drying principle must be employed correctly in the proper type of equipment. Logically, the idea of the hot air dryer was not developed until the liquid flux technique was introduced as standard practice and functioning smoothly.

While no specific hot air dryer design can be offered at this time, certain ideas can be obtained from the sketches shown in Figs. 2 and 3 which depict in a general manner the types of dryer installations desired in various fields of galvanizing for employing the liquid flux technique. Liquid fluxing and hot air drying should be especially applicable in the range boiler and tank field where the old method of drying and putting sal-ammoniac salt in the holes for fluxing has been the cause of considerable trouble.

Types and Designs of Hot Air Dryers

Figures 2 and 3 are conceptions of two types of hot air dryers. The dryer in Fig. 2 consists of an oven built so that two or more unit heaters can be set in the side walls as shown. The hot air blows around inside the dryer and up through the steel grating or grill over the top. This dryer, obviously, could only be used for iron and steel articles of a type that would not pass through the grill. An extra perforated covering with smaller openings might be used as a spare grill to place over the top of the grating when small articles are to be air dried.

The dryer shown in Fig. 3 is intended for articles entering the unit continuously from a slanting slide. The hot air in this dryer is developed by blowing cold air over steam pipes set in the base as shown. The articles fall into an open cradle and are carried up and around by a cog wheel that just fits each article. The hot air outlets conduct the warm air over the work



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coming into and going out of the dryer.

Another possible type of dryer might be visualized exactly the same as a pickling tank only instead of lowering the articles into a liquid, they are lowered into a tank of hot air. Still another type might be a tunnel dryer with hot air blowing in one end and out the other. This design would possibly be suitable for wire galvanizing or for range boiler and tank galvanizing, as well as strip steel galvanizing.

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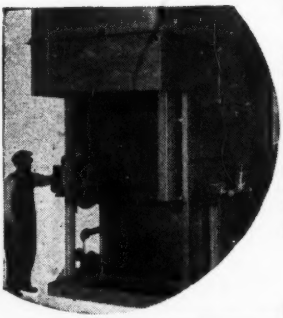

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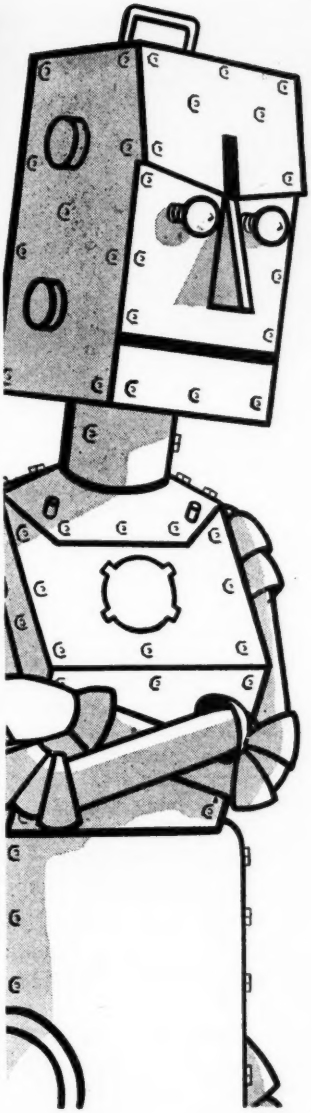

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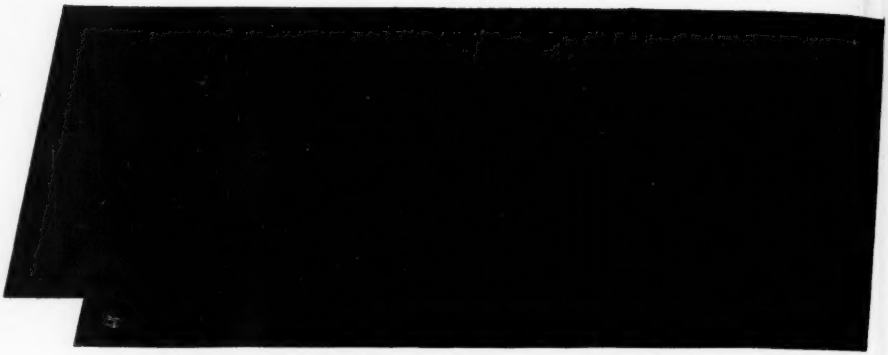

By ED. H. BUCY*
as told to Burr Price

MODIFICATION and relaxation of many WPB control orders were fairly well under way when the German war effort crumbled to an end in the early days of last month and manufacturers everywhere kept in close touch with the special committees assigned to particular problems of reconversion. However, it was made very clear that few of the orders affecting the chemicals industry would or could be revoked at an early date. J. A. Krug, WPB chairman, again emphasized what has long been recognized; namely, that concentration of our armed might to crush the Japanese in the Far East would increase rather than lessen the needs for chemicals, and this despite many cutbacks resulting from victory in Europe.

Why is this so and what will be the effect currently and in the next few months on the protective coatings industry and on those metal finishing plants dependent on its products and eager to resume civilian manufacturing as WPB authorizes resumption of output?

This general question can be broken down into several more specific ones, the answers to which should give a high degree of satisfaction with regard to the immediate needs of the metal-finishing field. Work done and which will continue to be done gives promise of important technical advances available for postwar industrial uses when materials control and man-power shortages will have come to an end. And let it be understood and remembered that the man-power problem is a dominant factor in many phases of the chemicals industry operation at this time.

I. The Immediate Situation

Despite the critical material shortages which are summarized later in this presentation and with due regard for the demands of the armed forces, especially the Navy, for the planned knockout blows in the Orient, there is no reason why the metal-finishing industry should not be able to meet

*Mr. Bucy, assistant general manager of the Cellulose Products Department of the Zapon Division, Atlas Powder Company, has just been elected president of the New York Paint, Varnish and Lacquer Association, which he served last year as chairman of its Specialized Production Finishes Committee. In 1942-1943, he was chief of the Protective Coatings Section, Chemicals Bureau of WPB. Mr. Price is managing editor of National Painters Magazine.

its requirements for civilian production, with the qualification that perhaps these finishes will lack something by way of color and gloss. It may be stated definitely that good usable materials will be available by virtue of the fact that manufacturers have developed finishes of satisfactory performance through perfection of new processing methods and the utilization of materials not hitherto considered adequate. For example, it has been found that petroleum base resins, formerly used only in plastics, now can be formulated with drying oils to make a splendid industrial coating.

Consensus is that near the top of the list for civilian production, WPB will authorize automobiles, refrigerators, washing machines for clothes and dishes, vacuum cleaners, and other appliances on which the American householder has learned to depend. But WPB authorization for metals and other structural parts in the manufacture of such items will not necessarily include finishes. It will then be up to the metal manufacturers to use the ingenuity of their finish suppliers to obtain a finish that will be usable and satisfactory for the time being.

This will be possible because there are certain types of finishes currently available, such as the medium blue lacquer enamel, composition of which is outlined in Fig. 1; because of other finishes, such as the black phenolic enamel (Fig. 2), which are available in limited quantities now with a greater supply to be expected later. The National Paint, Varnish and Lacquer Association is actually engaged in presenting these needs.

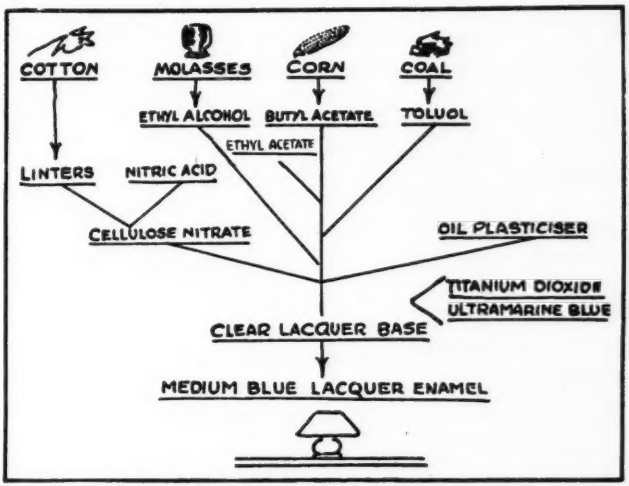

Fig. 1—Type of Currently Available Finish

II. Demands of the Pacific War

Before reviewing in detail the shortages and controls affecting production of protective coatings, a brief statement is in order concerning the part they have played in the overall war effort so far and what they and their chemical components must be called on to do now in the distant battlefields of the Orient. Readers of PRODUCTS FINISHING are familiar with the story of "Metal Finishes at War," printed in the issue of May, 1944. Briefly, this article recounted how everything that "fights, flies or floats" requires a protective coating and it cited countless instances of how the achievements of paint chemists and production specialists in-

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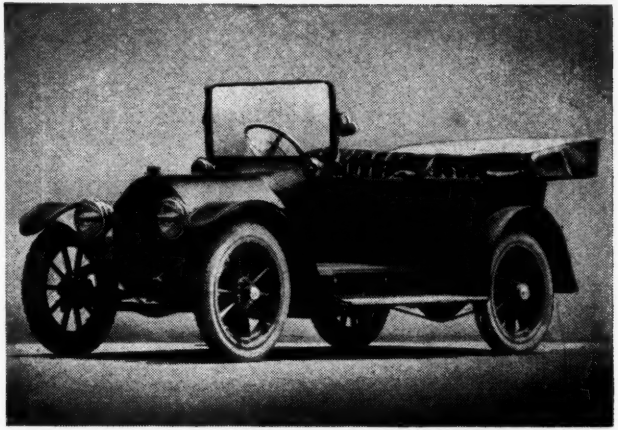

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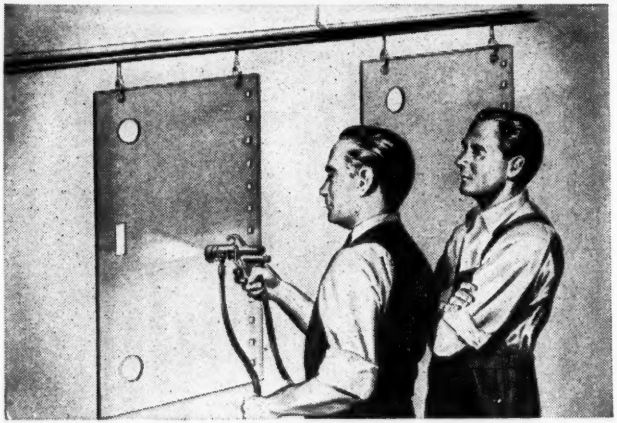

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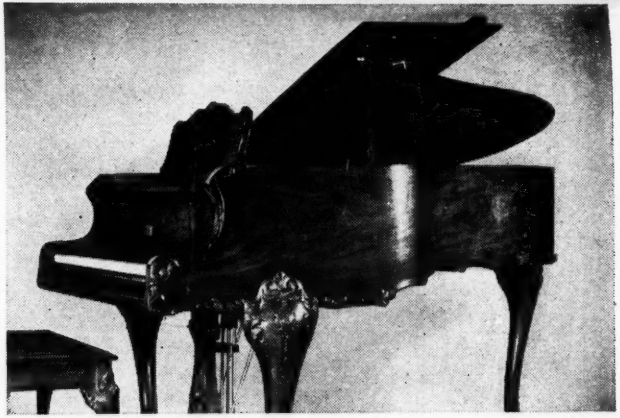

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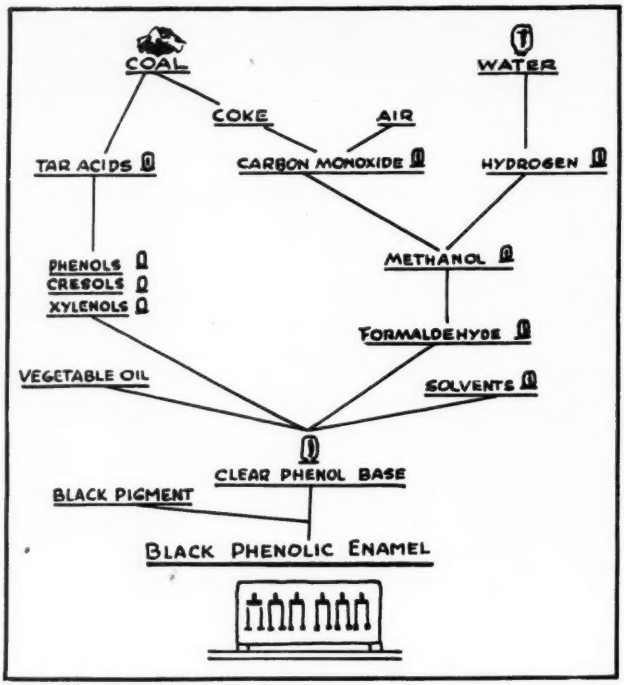

Fig. 2—Type of Finish Partially Available Now

creased the efficiency of men and machines.

Now that the war in Europe is over, more men, machines, and supplies will soon start on the long haul to the Far East. The type of war out there will be different. Atmospheric conditions are more difficult. Machines and equipment will be subject to far greater wear and tear en route and in action. They will have to have greater protection, and the finishes will have to be tougher. Also, there will be a greater number of supply depots and a greater need for finished items at all of them, even at the risk of duplication.

III. The Materials Situation Analyzed

1. **Phthalic Anhydride.** This basic chemical used in the production of alkyd resins and most plasticisers for lacquers in general use in the metal finishing industry is one of the most critical raw materials in the war production program today because of its many uses. Not only is it a vital element in the manufacture of protective coatings as indicated above but phthalic anhydride is used in the production of dibutyl phthalate for the making of smokeless powder and the explosives program for the Far Eastern campaign cannot be relaxed. Futhermore, it is used in the manufacture of dimethyl phthalate for insect repellant purposes which will be called for in greater and greater quantities as more and more men are transported to regions where life would be intolerable without insectifuges.

While an increase in phthalic anhydride production may be expected in the coming months, the additional output will most certainly be reserved for uses indicated above, and, thus, this limitation will be a factor for some time to come in controlling production of the type of alkyd resin finish for commercial purposes as illustrated in Fig. 3.

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RUBBER GLOVES
14" Length Industrial Type

Heavy duty. Resistant to acids and oils, made from Du Pont neoprene. These gloves are Army specification rejects but positively serviceable for industrial use.

95¢ per pair in dozen lots

IMMEDIATE DELIVERY
SIZES 10-11-12

ALSO AVAILABLE . . .
Medium weight. Wrist length (10½") Neoprene Latex Gloves—irregulars. Oil and Acid resistant. For industrial use. Sizes 7 to 9 in half sizes.
Sizes 9½ to 11
35¢ per pair in doz. lots

25¢ per pair in dozen lots

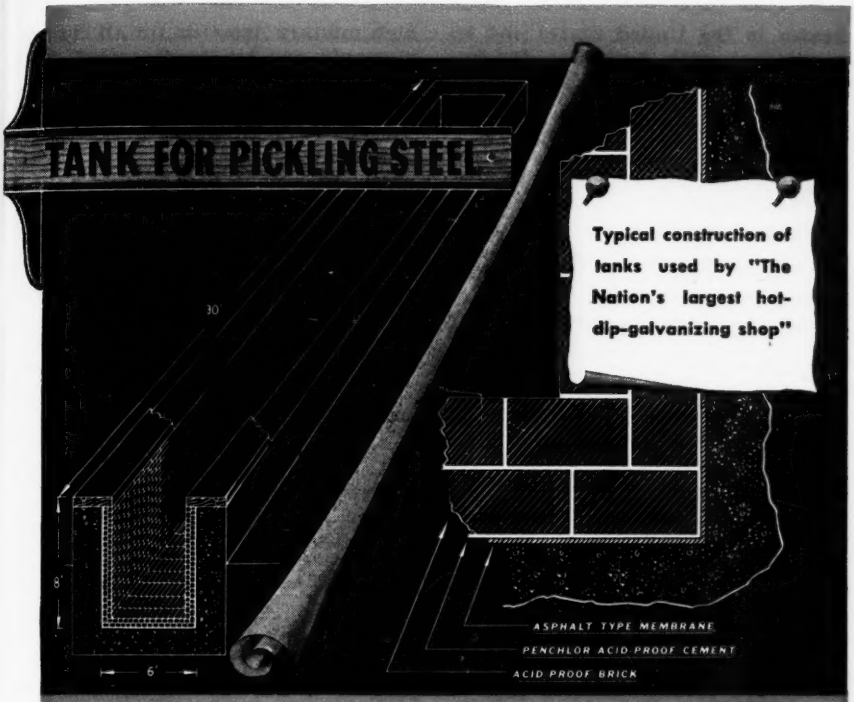
RUBBER GLOVE
COMPANY OF AMERICA
18 MURRAY STREET
NEW YORK 7, N. Y.

however. Alkyd resins although first developed some years ago were just getting into their stride at the outbreak of the war. Due to the demands of the armed forces, marked advances have been made in the matter of formulating with them, proven by excellent results; also, semi-alkyd finishes and oil modified alkyds have been developed. This means that after the war many superior types of alkyd based materials for air-drying, baking, spraying, or brushing will be on the market and, furthermore, in large quantities due to the stepping up of phthalic anhydride production facilities as a result of the national emergency.

2. **Urea Formaldehydes and Melamines.** There are some signs at the present of an easing in these chemicals, and it is worth noting that finishes formulated with them are proving quite satisfactory as interim materials, a point which is recognized by those who previously may have frowned on a non-alkyd finish.

3. **Pigments.** Titanium dioxide is the pigment of great importance to the makers of industrial products finishes, and the situation here is particularly tight. There has been no real change in the picture for some months and overall demand continues in excess of productive capacity which is in turn governed to a large extent by the man-power situation. Military requirements continue to be tremendous, particularly on the part of the Navy, but with the possible easing of the labor crisis following the victory in Europe there may be the chance of an improvement in supply.

4. **Oils.** Linseed oil is due to ease in supply by the end of the year, which will be a welcome relief to all divisions of the protective coatings industry, after many months of quota cuts and inventory controls. The immediate future will continue to be tight, but good prospects for crop in-



When steel plates are pickled, prior to galvanizing, in 10% sulphuric acid at 180° F., corrosive action is severe. The tank shown above is lined with a double course acid-brick, laid entirely with Penchlor Acid-Proof Cement, which gives corrosion protection and also withstands the physical abuse resulting from submerging and withdrawing steel plates in this solution.

PENCHLOR

Reg. U. S. Pat. Off.

Acid-Proof Cement

. . . sets quickly, reducing construction delays. It is a self-hardening sodium silicate type cement and has exceptionally long life, as proved in hard service and under severe acid conditions. It is unaffected by *all acids*—hot or cold—dilute or concentrated—except hydrofluoric acid.

Penchlor Acid-Proof Cement, used as a mortar, adheres strongly to brick, steel, glass, lead, rubber and asphalt. Write today for further information.

OUR LONG EXPERIENCE WITH CORROSION PROBLEMS QUALIFIES US TO OFFER OUR RECOMMENDATIONS IN A WIDE VARIETY OF CONSTRUCTIONS. WRITE US ABOUT YOUR PROBLEM—NO OBLIGATION!

SPECIAL CHEMICALS DIVISION PRODUCTS
Acid, Alkali, and Solvent proof Cements • Lead Fluoborate Concentrates • Fluoboric acid • Acid, Alkali and Solvent Emulsion Type Cleaners • Paint Strippers • Pickling Agents.

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SPECIAL CHEMICALS DIVISION
PENNSYLVANIA SALT MANUFACTURING CO.
Dept. PF, 1000 Widener Bldg., Phila. 7, Pa.
I would like to have a free copy of your booklet No. 6 on Penchlor Acid-Proof Cement.
NAME _____
TITLE _____
COMPANY _____
ADDRESS _____

creases in the United States and an arrangment with Argentina for importation of flax in exchange for American fuel oil point to an eventual betterment. However, this improvement in the linseed oil situation might easily be nullified if other material shortages are not corrected at the same time.

Tung oil is fairly free but the cost factor here is almost prohibitive, current quotations of approximately forty cents a pound comparing with the ten to twelve cent per pound figure of the days before the Pacific war.

5. **Colors.** The color picture is not bright, and will not show improvement for some time to come. Ultramarine blue is fairly free at this time, but reds, greens, and yellows will not be available for many months. Earth colors, blacks, and whites will have to suffice. The man-power shortage is a very definite factor in this critical position, which also is affected by the high military demands for all chrome pigments and by the fact that military exigencies have diverted such raw materials as phthalic anhydride, benzol, and toluol from the organic color manufacturers.

6. **Rosin.** The protective coatings industry was actually shocked several months ago when a new control order brought home to everybody the tightness of the rosin supply and led to some drastic decisions in manufacturing and sales departments. There is no chance for an easing of the situation until the 1946 crop year, even though the man-power problem in the pine belt should be partially solved as a result of V-E Day. Also, despite the fact that the next crop year probably will bring in a better yield, the increased need for rosin by the synthetic rubber industry may mean less rosin for protective coatings, which will have a direct bearing on certain phenol modified types of coatings for use on such products as furniture, electric transformers, and so on.

7. **Solvents.** In February of this year, lacquer solvents were allocated rather freely. Since then, the supply and demand picture has fluctuated monthly. However, the future of solvents supply looks favorable. This, together with the availability of

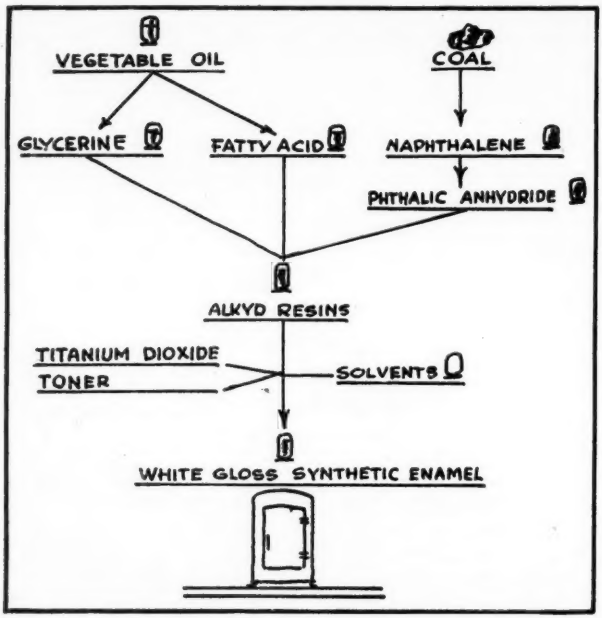
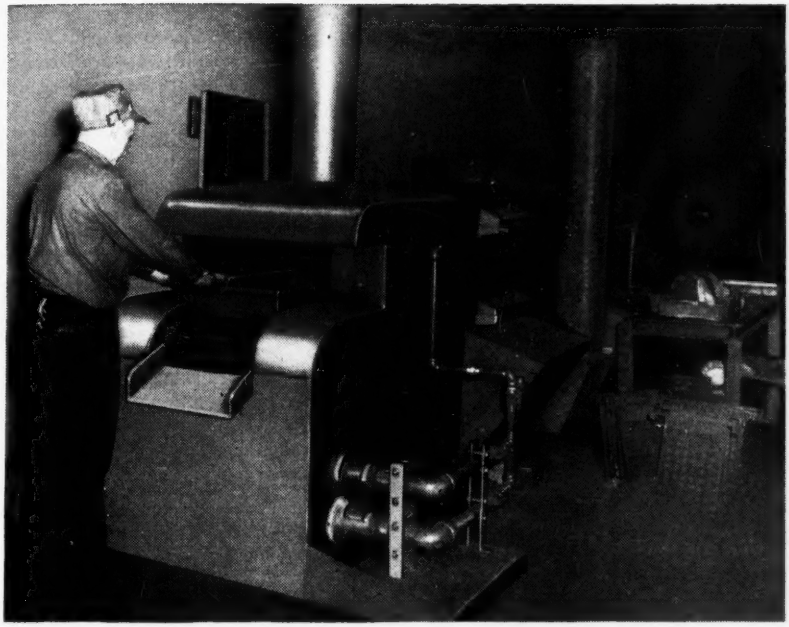


Fig. 3 — Type of Finish Not Yet Available

Ransohoff Equipment for the Surface Treatment of Metals



The Queen City Steel Treating Company of Cincinnati uses this Conveyor-type Ransohoff Cleaning Machine

FOR WASHING AND RINSING PARTS AFTER HEAT TREATMENT.

Parts heat-treated in a molten salt bath are run through this machine to remove adhering salt and oil. Since its installation in early 1943 it has been in continuous service 24 hours a day. Formerly this work was handled in boiling pots. Think of the difference now!

Of course, this is an example of a special application but RANSOHOFF EQUIPMENT can be applied to every industry in which thorough cleaning is essential to further processing. As a matter of fact, Ransohoff designs and builds equipment for scores of different industries saving time and money in practically every case.

RANSOHOFF ENGINEERS *will help you solve your problems . . . immediate and post-war.*

N. RANSOHOFF, Inc.

1311 TOWNSHIP AVE., CINCINNATI, OHIO

nitro-cotton, makes the lacquer supply situation not one of immediate concern.

IV. Surplus Stocks Available

It is an interesting commentary that one of the prime and proud achievements of the paint and varnish industry in war should now be one of its principal headaches. The development of the lusterless olive drab enamel (which closely followed the formulation of the white gloss synthetic enamel shown in Fig. 3) was a definite factor in the success of the American tank. It had minimum visibility, low specular reflection, and great durability. Applied over a special red oxide or zinc chromate primer, it afforded great protection to the giant mechanical fighters. There is at the moment a huge potential surplus of this lusterless olive drab enamel available, and the experts have been striving to find a suitable use for it in the civilian market.

V. The Postwar Picture

As indicated, the paint industry, using the broad term, it is at the moment producing the maximum amount of protective coatings possible in view of the limitation on available materials, and they are utilizing raw materials in some cases that were never expected to fulfill the job they have been called on to do. As in the case of alkyd resins mentioned above, where marked advances in formulation and processing have been registered, so it will be after the war with many other types of finishes. Recent developments in the fields of synthetic resins and synthesized oils give assurance that they will be of tremendous importance in the field of specialized industrial finishes. Perhaps the full story of these developments may be told within the next few months.

SPEKWITE

ECONOMICAL, DECORATIVE QUALITY PLATED FINISH

Tarnish Resisting — Faster Plating — Lustrous Finish

DRASTIC NEW REDUCTION IN PRICE SCHEDULE afforded by considerable savings in manufacturing costs. SPEKWITE costs less than nickel plating for the same thickness.

ORIGINAL PATENTED TRIMETAL ALLOY PLATE OF COPPER, ZINC AND TIN. No royalties or license fees. Covered by U. S. Patent No. 2,079,842 issued May 11, 1937.

WRITE FOR LITERATURE — Data sheets describing SPEKWITE in detail—advantages, properties, characteristics and price—will be sent promptly on request. There is no obligation.

SPEKWITE plates quickly and directly on nearly all metals, and covers hard solder and most soft solders. Soldering and welding are easily accomplished on SPEKWITE plated work. Extremely high throwing power enables it to penetrate deep recesses. Used extensively on Government work. SPEKWITE has high salt spray resistance (about 1½ times nickel for same thickness), and is non-magnetic. Articles can be formed after plating without cracking or peeling. Plating can be controlled by plater at tank, or by laboratory. Ideal for plating in a steel tank, basket and barrel. Economical—only 1 lb. of SPEKWITE plates about 100,000 sq. in. minutes of work. Reflectivity is high —82% of silver.

SPEC

SPECIAL CHEMICALS CO.

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SUN SPIRITS

strips off dirt and oil . . . speeds up output

Don't let slow, costly metal cleaning operations "bog down" production in your plant. Follow the example of this ordnance manufacturer whose output of vital parts began to slump due to faulty cleaning.

Dirty, oily film clung to parts after cleaning with competitive material. Also, the long drying time between washing and the next operation slowed up production of vital parts.

Troubles disappeared when a Sun Engineer suggested a switch to Sun Spirits. Parts now are sparkling clean without spots or dirty film and Sun Spirits dried quicker . . . raised output . . . lowered costs.

Let Sun Spirits help you find the way to easy metal cleaning in your plant. It's fast-cleaning . requires no mixing or heating it's safe. For your copy of "Case Histories of Cleaning Up War Parts" write . . .

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SUNOCO

SUN INDUSTRIAL PRODUCTS

OILS FOR AMERICAN INDUSTRY

News of the Industry

Udylite Appoints

The Udylite Corp., 1651 E. Grand Blvd., Detroit 11, Mich., announces the appointment of Arthur A. Schuenemann as metal finishing service engineer. A graduate of Ohio State University, Mr. Schuenemann was formerly employed by

Arthur A. Schuenemann

the General Electric Company and for the past ten years has been with the Harshaw Chemical Company in plating research and service engineering.

Udylite also announces the appointment of William Henry Moyer as Philadelphia representative and service engineer operating out of the company's New York office. Mr. Moyer is a graduate of Bethany College, Pa., and was formerly plating control chemist with the Jacobs Aircraft Engine Company of Pottstown, Pennsylvania.

United Chrominum Opens New District Office

To streamline present activities and to prepare for postwar operations, United Chromium, Inc., announces the opening of a new district office in Dayton, Ohio, and the appointment of two men, well known in the midwest territory where they have been active for many years, as district managers.

L. A. Critchfield is now managing the district office at 845 N. Main St., Dayton, Ohio, and will supervise activities in southern Ohio and Indiana, West Virginia, Kentucky, Tennesse, Alabama, and Mississippi. Mr. Critchfield joined United Chromium in 1940 with an excellent background of technical training and more than 15 years research and production experience in metal finishing. Formerly in charge of the plating and polishing division of Hamilton Watch Company, he served as vice president of the Philadelphia Branch and later founded the Lancaster Branch of the American Electroplaters' Society.

F. H. Dudley has been made Detroit District manager in charge of Michigan, northern Ohio and Indiana, and western Pennyslvania. He is a graduate industrial chemical engineer and has been with United Chromium since 1929, specializing in sales and service engineering. Having a broad practical experience in the installation and operation of metal-finishing processes, Mr. Dudley enjoys a wide acquaintance among manufacturers and job platers in the East as well as in the Mid-West. The Detroit sales office, together with a research laboratory and pilot plant, is located at 2751 E. Jefferson Avenue.

Roxalin Technical Staff Additions

Roxalin Flexible Finishes, Inc., Elizabeth, N. J., announces the addition of Sylvan E. Beck and John J. Oudhoff to its technical staff. Mr. Beck, B.S., M.S., who has written and participated in writing many widely used U. S. Army protective coatings specifications, served from 1939 to 1945 as chief chemist of the Paint and Technical Laboratory, Holabird Ordnance Depot and subsequently Aberdeen Proving Grounds.

John J. Oudhoff

Mr. Oudhoff was educated at the University of Illinois and until recently was head of the Organic Laboratory at the Eastern Aircraft Division of General Motors Corp., Linden, N. J., where his previous experience as a consulting chemist on protective coatings was applied to aircraft finishes. Both Mr. Beck and Mr. Oudhoff are engaged in customer service and product development in the Roxalin laboratories.

Hercules Officers

Directors of the Hercules Powder Co., Inc., Wilmington, Del., at their annual organization meeting re-elected all officers of the company as follows: Charles A. Higgins, president and chairman of the board; Leavitt N. Bent, Petrus W. Meyeringh, Edward B. Morrow, Anson B. Nixon, and Philip B. Stull, vice presidents; Raymond N. McAdams, secretary, and Francis J. Kennerley, treasurer. The directors also re-elected the Executive Committee of Messrs. Higgins (chairman), Bent, Meyeringh, Morrow, and Nixon.

H. M. Marie to Represent Rheem Research

Howard M. Marie has been appointed to represent Rheem Research Products, Inc., Baltimore, manufacturer and marketer of Iridite, in the southern New Jersey, Pennsylvania, Maryland, and West Virginia territory. For the past 20 years Mr. Marie has been closely associated with the metal-finishing and electroplating industry.

Pecsok Elected Vice President

According to an announcement made by The Osborn Manufacturing Co., Cleveland, Ohio, manufacturer of power brushes, M. C. Pecsok, former sales manager of the company's brush division, has been elected vice president of the company. Born in Hungary, Mr. Pecsok came to America when he was six. He started to work for Osborn in 1912 as a cost clerk.

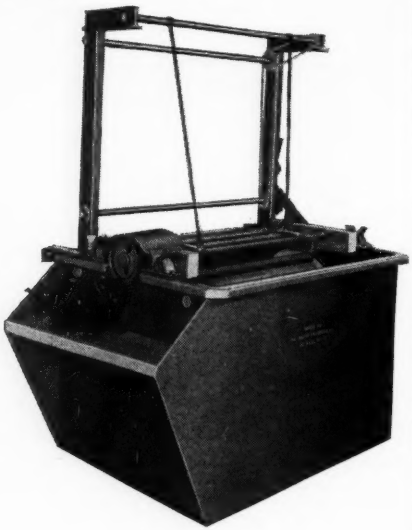
M. C. Pecsok

Mr. Pecsok, with the help of his associates in the Osborn engineering and technical departments, has aided many war industries in the efficient utilization of power brushing. He is a member of the Cleveland Athletic Club and the Sales Executive Club of Cleveland.

NU-WHITE

OFFERS

SAVINGS in both Manpower and precious Time . . . by using a unit with OUTSTANDING FEATURES! Permits heavy loads . . . all conductors, tanks, rods, connections and switches have ample current carrying capacity . . . Cylinders constructed from heavy laminated bakelite are standard in all barrels.



NU-WHITE PRODUCTS CO.
2288 University Ave.
ST. PAUL 4, MINNESOTA

Devoe & Raynolds Purchases Beckwith-Chandler Company

Elliot S. Phillips, president of the Devoe & Raynolds Co., New York, N. Y., manufacturer of paints, varnishes, brushes, and so on, announces that his company has purchased the Beckwith-Chandler Co., Newark, N. J., producer of railroad and industrial product finishes. This acquisition is part of Devoe & Raynolds' plan for postwar development, designed to broaden its manufacturing facilities and sales distribution.

Clarence W. Slocum, president of

Clarence W. Slocum

Beckwith-Chandler, will continue as president of the Beckwith-Chandler division of the Devoe & Raynolds Company. Other officers of Beckwith-Chandler are James A. MacGregor, treasurer, J. Alex Wilson, vice president, and Arthur W. Slocum, sales manager and secretary.

Nelson Todd Leaves H-VW-M

The Hanson-Van Winkle-Munning Co., Matawan, N. J., announces the retirement of its secretary and director, Nelson Todd, who leaves to go into other fields. Mr. Todd, who has served with the company for 29 years, has contributed greatly to its welfare and has the best wishes of his associates for his future success.

N. A. Munning, formerly assistant treasurer, has been elected secretary of the company.

PRODUCT IN THE NEWS

STOP CORROSION
WITH THIS PLASTIC BASE MATERIAL APPLIED LIKE PAINT!
UCILON
WHITE
UNITED CHROMIUM
UCILON* is more resistant to more corrosive elements than any coating you ever tried.
Available in white, clear, black or colors.

Because of the special resins and solvents used, UCILON* is restricted today to specific end uses.

WHAT **UCILON*** is a new surface coating material which resists *all* acids in commonly used concentrations – *all* alkalies and salts at ordinary temperatures—plus alcohols, petroleum derivatives and natural oils. It is non-toxic, non-conductive, inhibitive to fungus.

WHERE **UCILON*** protects the surfaces of process equipment, piping, walls, beams, ductwork, tanks, etc., *where other coatings fail.* It produces an attractive, glossy finish on metals, wood, or concrete,—gives products subject to corrosion extra service, extra sales appeal.

UNITED CHROMIUM
INCORPORATED
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HOW **UCILON***, compounded from special synthetic resins, can be brushed, dipped or sprayed like ordinary paint. Formulations for special needs such as quick drying, elasticity, matte surface, etc.

*Trade Mark Reg. U.S.Pat. Office and Foreign Countries.

FREE BULLETIN tells how you can save time, labor and materials in protecting surfaces against even the most destructive elements.

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Send illustrated UCILON* Bulletin without obligation.

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Ozar Joins Cowles Detergent Company

The Cowles Detergent Co., Cleveland, Ohio, announces the appointment of Clarence G. Ozar to the staff of its metal cleaners service laboratory. Mr. Ozar received his degree in chemistry from the University of Detroit and comes to Cowles after 12 years experience in the metal-working industries.

Clarence G. Ozar

Mr. Ozar's technical background and practical experience makes him an extremely valuable addition to the company's rapidly expanding metal cleaner department. He will assist directly in the solving of metal cleaning problems both in the laboratory and in the field.

Welsh Elected Vice President

L. Earle Welch has been elected vice president of the Industrial Hard Chromium Corp., 7 Rome St., Newark, N. J., and will head a newly established division of engineering research and development in the application of hard chrominum plating to molds and tools used in the plastics industry.

A graduate of Massachusetts Institute of Technology, Mr. Welch was formerly with the General Electric Company at Lynn, Mass., in engineering research. He is well known in the plastics and machine tool industries for his recent research and engineering work in the development of the tools and equipment which made possible the production of the plastic frangible bullet slug now used in Air Corps gunnery practice.

New Mixing Equipment Representative

Mixing Equipment Co., Inc., Rochester, N. Y., manufacturer of "Lightnin" and "Mixco" mixers and agitators, announces the appointment of George R. Mellema as representative for the company in the territory comprising Minnesota, North Dakota, South Dakota, and the extreme western section of Wisconsin. His offices will be located at 1024 Plymouth Bldg., Minneapolis 2, Minnesota.

A graduate chemical engineer of Northwestern University, Mr. Mellema has for the past 12 years been a manufacturers' agent in the above territory and has specialized in heating and ventilating equipment, steam and mechanical specialties. Prior to operating as a manufacturers' agent, he was employed as an engineer by a Minnesota firm. Mr. Mellema's services will be available to those in his territory requiring aid on problems of mixing and agitation.

Ending Your Metal Finishing Difficulties . . .

Imperfectly cleaned surfaces are usually the cause of imperfect finishes. Metal must, therefore, be chemically clean—free of minutest foreign particles; and for this high standard—

PERMAG Cleaning Compounds

are used by leading electroplaters. PERMAG Compounds have proved their dependability, thoroughness, economy and speed over 22 years of service to the industry.

May we send you more details?

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THE BURRS COME OFF QUICKLY...ECONOMICALLY

Yes, you can remove burrs with hard burring tools but how often do you take off too much metal? Or you can use a hand file or emery cloth but isn't that rather slow and expensive?

Why not do as White Engineering Company of Baltimore does on its many sizes and shapes of die-castings? It uses the Lea Method and properly selected Lea Compositions on flexible buffs and bobs. Why not burr, polish and buff as countless other plants?

Send us a complete description of the part or parts for which you would like our recommendations for more effective and cheaper de-burring or other finishing operations. Better yet, if possible, send us the parts. Our technical staff and laboratory will be glad to study your problem and make a complete report. If necessary, we'll send a representative to your plant.

THE LEA MANUFACTURING CO.

Waterbury 86, Conn.

Burring, Buffing and Polishing . . . Manufacturers and Specialists in the Development of Production Methods and Compositions

Elected to Presidency

Ed. H. Bucy, assistant general manager of the Cellulose Products Department, Zapon Division of the Atlas Powder Company, has been elected president of the New York Paint, Varnish and Lacquer Association. Mr. Bucy served the Association as chairman of the Specialized Production Finishes Committee. In 1942-43 he was chief of the Protective Coatings Section, Chemicals Bureau of WPB in Washington.

Ed. H. Bucy

Other officers elected at the annual meeting of the Association on May 10 were: Vice president, Leon Davis Eldot, L. Sonneborn Sons, Inc.; secretary, Thomas F. Brennan, American Can Company; treasurer, Hendrick E. Hendrickson, S. Winterbourne & Company.

Appointments at Pennsalt

The appointment of A. S. Woodard as assistant chief engineer has been announced by Y. F. Hardcastle, vice president of the Pennsylvania Salt Manufacturing Co., Philadelphia, Pa. Prior to this appointment, Mr. Woodard was senior chemical engineer.

Other appointments in the company's central engineering department are as follows: J. P. Evans, senior electrical engineer; R. R. Walden, senior mechanical engineer; P. F. Dorney, senior civil engineer, and J. W. Dadley, senior design engineer.

JENSEN *Light-Weight* CONVEYORS GIVE YOU THESE 4 ADVANTAGES

1 More easily and quickly installed.

2 Carry up to 175 pounds per hook, depending upon length of conveyor.

3 No lubrication required . . . you don't soil parts . . . you save maintenance time.

4 Available in Loop Around, Straight Line, Dual-Strand, Belt and Special Types.

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Striking in a diagonal buffing line was made easier and in less time by using the correct type of "SCOTCH" Masking Tape. It was one of many places where this timesaver proved its handiness and value. Here's a feature about "SCOTCH" Masking Tape—give a workman a roll and he'll turn up with a dozen timesaving operations for you.

There are many constructions of "SCOTCH" Masking Tape. They vary in weight of backing, type of backing, type of adhesive and all are versatile in their use. Having the correct type to meet your requirements is important.

As the originator and the largest manufacturer of unified pressure sensitive tapes we have the know-how and unmatched experience to recommend the correct type "SCOTCH" Masking Tape to use for the greatest economy of operation.

Feel free to ask for a tape engineer to help you in making the correct choice.

"SCOTCH" TAPE for Masking... Holding... Sealing... Splicing... Reinforcing ... Identifying ... Protecting... Sandblasting.

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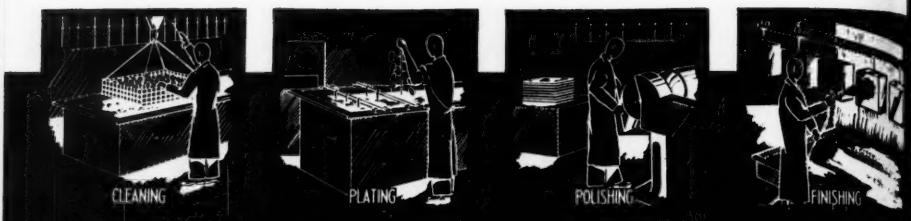
GENERAL OFFICES: SAINT PAUL 6, MINN.
BRANCHES IN PRINCIPAL CITIES

"SCOTCH" is the trade-mark for the Adhesive Tapes made by M. M. & M. Co.



Modern Mechanic Metal Parts Washer

An automatic machine for industrial parts washing has been placed on the market by the Modern Maid Co., 122 S. Michigan Ave., Chicago 3, Ill. The machine is so designed that one individual can handle three baskets of metal parts, washing, rinsing, and draining each basket in one operation.

The Modern Mechanic Metal Parts Washer includes only three moving parts; namely, a motor, impeller, and V-belt. The impeller pump is powered by means of a ½ h.p. single phase motor and is said to force a ton of solvent every minute over parts to be washed, quickly and efficiently removing acid, grim, grease, and so on. Only 65 gallons of washing liquid are used and the liquid is automatically screened by a baffle and grill so that it can be used over and over. The construction of the unit provides a settling action for dirt and chips.

The Modern Mechanic Metal Parts Washer illustrated herewith is 63 inches long x 21 inches wide x 36 inches high. An all-purpose model for off-and-on use in small areas, as well as conveyor type models for special jobs, can also be obtained.

Modern Mechanic Metal Parts Washer

Industrial Laboratory Oven

A streamline, compact, and completely self-contained oven for laboratory and pilot plant use has been designed by the Industrial Oven Engineering Co., 11621 Detroit Ave., Cleveland 2, Ohio. The oven is available in sizes having working spaces ranging from 3x3x3 feet to 6x6x6 feet in increments of 1 foot. Special sizes can be furnished to specification. Temperatures range up to 900 deg. F., with a guaranteed differential of ± 2 degrees.

The Industrial Laboratory Oven is usually furnished with electrical heating equipment but is designed to use any type of fuel. In every case, the heating equipment is contained within the oven

How to Avoid Finishing Bottlenecks Through **DESPATCH ENGINEERING**

A Complete Service

Why not be *sure* of finishing results by having experienced engineering specialists supply your *complete** system under ONE responsibility? This is the valuable service offered by DESPATCH Engineers.

You're protected against costly bottlenecks caused by inexperienced coordination of various finishing system elements. And you are assured of correct equipment, properly planned and installed to give you *all* the results you want.

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Despatch engineering specialists will plan, select, coordinate and install in your finishing department such items as:

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1896 1945

FOR STANDARD PRODUCTION you can always depend on USA Brand Felt Wheels.

None are genuine unless branded.
Wheels are manufactured

1" to 30" Diameter
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Bobs or Felt Wheels are shaped to your sketch.

SHEET FELT

ALL GRADES AND HARDNESSES

Standard Sheets—36" square, ⅛" to 4" thick

Strips 24" to 28 ft., ¼" to 3" thick
Other sizes as ordered.

Any test will prove quality a winner.

EASTERN FELT COMPANY

Manufacturers

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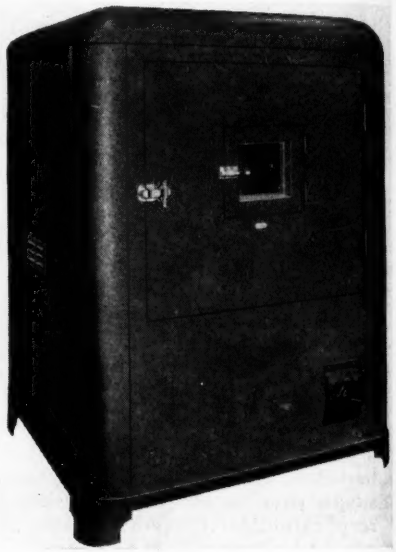
shell. The smaller models are shipped assembled, ready to connect to the heat source.

The Industrial Laboratory Oven is particularly designed for precision experimental work in drying, baking, evaporating, polymerizing, and so on, especially in cases where highly volatile solvents are used. It can be furnished with special construction to withstand corrosive fumes and is available with



Industrial Laboratory Oven

exterior baked enamel finishes in a variety of colors to harmonize with surroundings. Automatic temperature controls are provided to suit the processes for which the oven is to be used.

"Spekleen" No. 51 Rust Inhibiting Dip

A scientifically prepared metal dip for rust inhibition, to be known as "Spekleen" No. 51, is now being marketed by the Special Chemicals Co., 38 Irving Place, New York 3, N. Y. According to the manufacturer, Spekleen No. 51 can be quickly and easily applied to metal surfaces by merely dipping the work in the

NATIONWIDE INFRARED SERVICE

Specialists in the application of Infrared Radiant Energy, Fostoria Industrial Service provides the experience of over 3,000 installations. With complete technical facilities, operations of baking, drying, dehydrating are analyzed and pretested to accurately forecast the benefits of Infrared. Call Fostoria for "know-how" utilization of Infrared and sound engineering recommendations.

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Gives you fundamental information about Infrared — and Fostoria Evenray Systems.

Case history information applicable to your operation will be included if you send us general facts about your potential use.

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Independently Affiliated Manufacturers
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Amalgamated Electric Corp., Ltd., Toronto, Canada
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FOR BAKING • DRYING • PREHEATING • DEHYDRATING

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Northern Electric Co., Ltd.

hot solution and allowing to air dry. The dip can be employed after pickling and finishing operations or, after protective film of oil is removed, for subsequent operations where rust is not desired.

Spekleen-treated work can, it is claimed, be painted, lacquered, s o l d e r e d, brazed, or welded, and exposed to ordinary atmosphere over long periods without rusting. Said to give off no fumes or odor, a 6 oz. per gallon dip, the manufacturer states, will stand 27 hours and a 4 oz. per gallon dip 19 hours in a salt spray humidity chamber.

For present day and future requirements, use a Lupomatic DEBURRMASTER machine to deburr, cut down and polish metal and plastic parts.

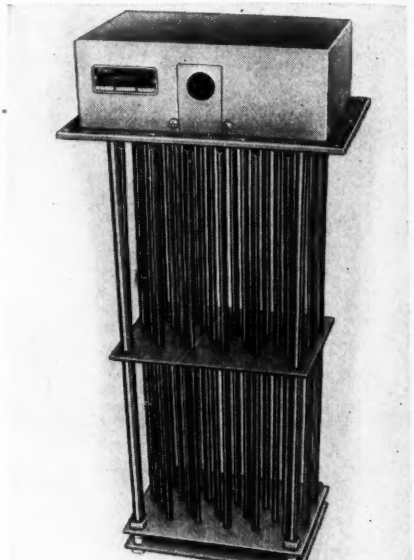
A DEBURRMASTER installation reduces your production costs and improves your product.

Send samples today for a free demonstration.

LUPOMATIC TUMBLING MACHINE CO., INC.
4510 BULLARD AVE. BRONX, N. Y.

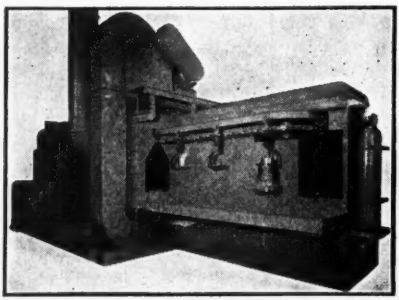
Wiegand Type TDH Chromalox Air Duct Heater

Designed for use in high temperature recirculating air systems for air tem-



Wiegand Type TDH Chromalox Air Duct Heater

peratures up to 1,050 deg. F., the Wiegand Type TDH Chromalox Air Duct Heater illustrated herewith has been brought out by the Edwin L. Wiegand Co., 7504 Thomas Blvd., Pittsburgh 8, Pennsylvania. The heater consists of a



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INDUSTRIAL WASHING MACHINES

Streamlined design. Recirculating hot or cold air blow off. Hidden motors, pumps and pipes are easily accessible. Piping and nozzles located to insure thorough cleansing of all surfaces. Rugged and efficient pressure pump. Corrosion resistant spray nozzles—from mist to open stream. Handling alkali to varsol as cleaner. Monorail, Belt, or Gravity type conveyors designed to carry any shape or size material. Variable speeds on conveyor drive synchronize production.

INTERNATIONAL CONVEYOR & WASHER CORP.
Write for circular.
652 E. FORT ST. DETROIT, MICH.

Build a Better Product with

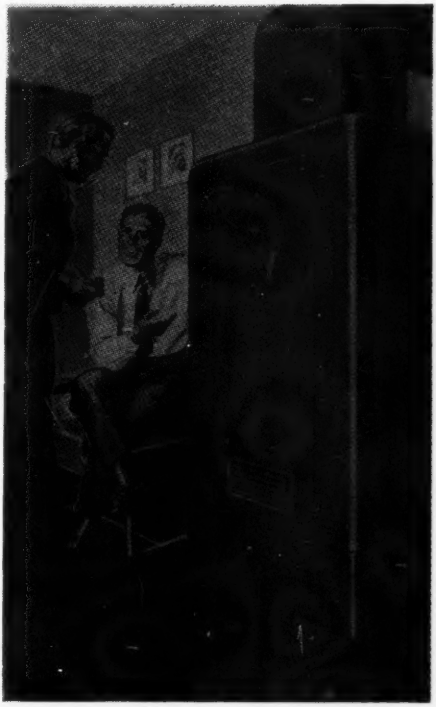
BONDERIZED

ZINC COATED

SHEET STEEL

Fine appearance that endures, essential to many sheet steel products, is a necessity where the product becomes a permanent and prominent part of home equipment.

Bonderized zinc coated sheet and strip steel as supplied by many steel mills provides a surface that bonds the final finish to the metal, to assure preservation of the finish appearance. It is a thoroughly workable sheet for practically all forms of fabrication. It brings new acceptance, new color, new sales appeal to your product.



PARKER RUST PROOF COMPANY
2172 E. MILWAUKEE AVE. • DETROIT 11, MICHIGAN

BONDERIZING • **PARKERIZING** • **PARCO LUBRIZING**
HOLDS PAINT TO STEEL — INHIBITS RUST — RETARDS WEAR

PARKER PRODUCTS CONQUER RUST

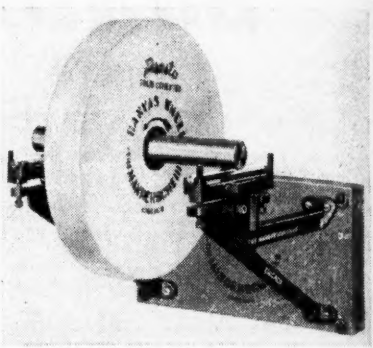
series of alloy sheathed Chromalox tubular heating elements which are mounted in an all-steel frame with terminals brought out through a steel flange. The unit is constructed for quick and easy installation in an opening in the air duct and is secured by bolting the mounting flange to the outside wall of the duct.

The heated sections of the elements are located entirely within the air duct, while the terminals are located outside in the cool zone. A steel cover ensures against mechanical damage to the terminals and eliminates the hazard of exposed electrical connections. A separately mounted thermostat with sensitive bulb located close to the heating elements provides for protection against overheating if the air flow is restricted or accidentally stopped.

The Wiegand Type TDH Chormalox Air Duct Heater is rated at 230 volts, 6 to 30 kilowatts.

"Presto" Static Balancer

An improved static balancing machine developed especially for polishing wheel service has been added to its "Presto" line by The Mandercheid Co., 605 W. Washington St., Chicago 6, Ill. Durably built and arranged for convenient out-of-the-way mounting on a wall or post, the unit includes ways that are made of deep hardened steel and are ground and honed to razor straight edges. Each way is provided with a spirit level and



"Presto" Static Balancer

REMOVE PAINT

CLEAN METAL with FIDELITY

Stripping and Cleaning Compounds

No matter what the surface looks like, the right Fidelity product will restore it to clean metal in record time!

Coats of paint and enamel break loose easily with the proper stripper. Grease and grime quickly dissolve with the correct cleaner. The result is a perfectly clean surface, ready for any type of finishing.

Call in a Fidelity service engineer today for a free survey of your cleaning requirements. His recommendations will help to step up efficiency in your plant.

FIDELITY CHEMICAL PRODUCTS CORP.

430 RIVERSIDE AVE.
NEWARK 4, N. J.
HUmbolt 3-3640

"Serving industry with cleaning and stripping compounds"

Sluggish production lines take on new life with Pratt & Lambert Industrial Coatings.

PRATT & LAMBERT-INC.
Industrial Finishes
NEW YORK BUFFALO CHICAGO
FORT ERIE, ONT.

finger-tip precision leveling adjustment to allow for maintennace of maximum accuracy.

The Presto Static Balancer is furnished with a base for wall or post mounting and is designed for balancing wheels up to 18 inches in diameter. Ways are 10 inches between centers.

Mitchell-Bradford "Witch Oil"

The Mitchell-Bradford Chemical Co., 2446D Main St., Stratford P. O., Bridgeport, Conn., has placed on the market a rust-inhibiting oil, to be konwn as "Witch Oil," which is designed to protect metal stampings after pressing and while in storage or transit and acts as a bond for paint or enamel. Shells are degreased after pressing, dipped in the oil, and then conveyed to the point of assembly where the complete units can be enameled without further preparation.

According to the manufacturer, Witch Oil withstands baking heat up to 250 degrees and continues to maintain a film on the interiors of the shells, thus making unnecessary the application of oil for protection between manufacture and use. Witch Oil may be used for all types of steel stampings, forgings, and castings in the same manner.

Now for EVERY WORK SHOP!

NEW Invention Electroplates by BRUSH

Easy to Plate CHROMIUM GOLD, SILVER, NICKEL, COPPER

. . . For Pleasure and Profit!

If you have a workshop—at home or in business—you need this new Warner Electroplater. At the stroke of an electrified brush, you can electroplate models and projects—you can replate worn articles, faucets, tools, fixtures, silverware, etc with a durable, sparkling coat of metal . . . Gold, Silver, Chromium, Nickel, Copper or Cadmium. Method is easy, simple, quick. Everything furnished—equipment complete, ready for use. *By doing a bit of work for others, your machine can pay for itself within a week.* So make your shop complete by getting a Warner Electroplater right away. Send today for FREE SAMPLE and illustrated literature. ACT AT ONCE!

For
- MODEL MAKERS
- MAINTENANCE
- HOBBY SHOPS
- HOME SHOPS
- SALVAGE PARTS

Warner Electric Co., Dept. B-95
663 N. Wells St., Chicago 10, Ill.

Pennsalt PM-40 Acid Inhibitor

An organic acid pickling inhibitor in powdered form, designated as Pennsalt PM-40, has been developed by the Special Chemicals Division of Pennsylvania Salt Manufacturing Co., Dept. PF, 1000 Widener Bldg., Philadelphia 7, Pa. The material is said to be highly stable and completely soluble in pickling baths of either muriatic or sulfuric acid. According to the manufacturer, it contains 100 per cent active ingredients and is highly effective at such low concentrations as 0.02 to 0.10 per cent by weight of the pickling bath. Concentrations may be varied to meet plant conditions, production rate, and quality of surface desired.

Pennsalt PM-40 can be used in acid pickle baths prior to electroplating, galganizing, and enameling since it is free-rinsing and minimizes hydrogen absorption. The material is available in drums of 25, 100, and 200 pounds.

BEFORE

CLEAN, SMOOTH THREADS

Use Roberts Burring Compond for • Faster production • Complete contacting of all irregular contours due to flexibility of wheels • Smooth, clean work and good color • Preserves all essential dimensions.

Write for samples and suggestions.

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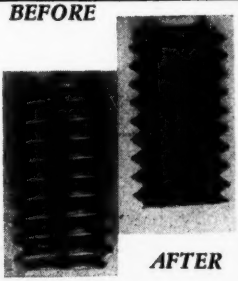
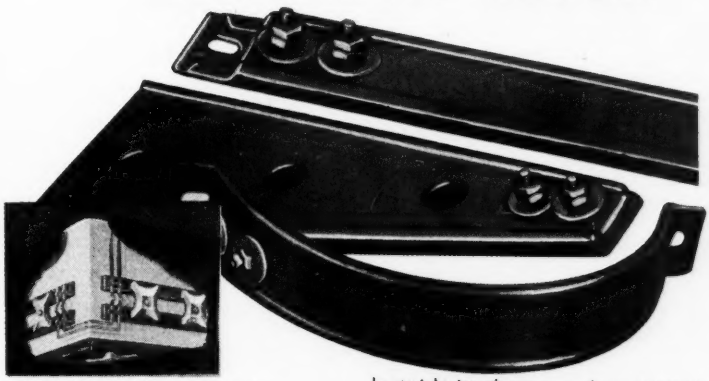


AFTER

Safe, convenient Heat where you want it with

CHROMALOX
ELECTRIC STRIP HEATERS



CHROMALOX Strip Heaters mounted on tank sides and bottom using Utility Clamps.

In straight lengths curves, rings, segments. 4½ to 95 inch lengths; ¾ to 2½ inch widths.

for application to flat or curved metal surfaces

CHROMALOX *Electric* Strip Heaters are simple to install . . versatile in application. They can be clamped to flat tanks, round vats, to pipes or tubes—lengthwise or on radius.

Use CHROMALOX Strip Heaters to heat gases or air . . . platens, dies, molds, liquids. Use CHROMALOX Strip Heaters wherever you want thermostatically controlled, dependable heat.

Consult your nearest CHROMALOX Application Engineer. He will estimate your electric heat requirements and recommend the CHROMALOX unit for your specific need.

Need More Information?

Write for *100 Ways to Use Electric Heat* booklet, Catalog 42 and the address of your nearest CHROMALOX Application Engineer.

Edwin L. Wiegand Company

7504 Thomas Boulevard **Pittsburgh 8, Pa.**

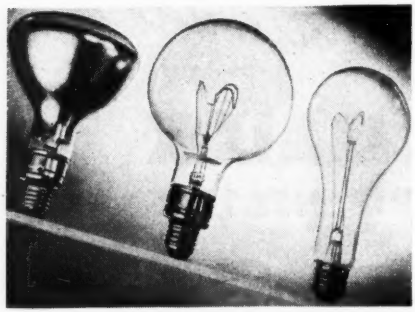
CHROMALOX

"Electric Heating at its Best!"

1C-5

Sylvania Infra-Red Lamps

Applicable for many industrial heating services, including plastic and metal preheating, baking, drying, and dehydrating, seven infra-red lamps comprising four clear drying and three reflector types with wattages from 125 to 500 watts are announced by Sylvania Electric Products, Inc., 500 Fifth Ave., New York, N. Y. The clear drying types provide constant heat center lengths which allow for changes in oven temperature simply by substituting lamps of suitable wattages. Reflector changes are unnecessary.



Sylvania Infra-Red Lamps

The reflector drying types comprise flexible infra-red heating sources for many drying and processing applications. All lamps with the exception of one clear drying type utilize medium-skirted bases which are locked to the bulbs mechanically so as to eliminate loosening.

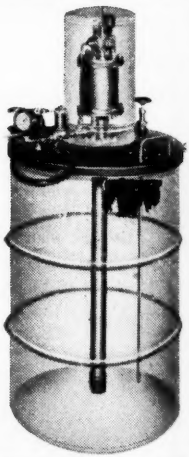
G-BEX 45-A Emulsifying Degreasant

The development of a concentrated emulsifying degreasant designated as G-BEX 45-A is announced by the Gaybex Corp., P. O. Box 3, 388 Franklin Ave., Nutley 10, N. J. An outstanding characteristic claimed for the compound is that it gains in strength with dilution. In addition, the degreasant is said to have a fresh, clean odor and to be chemically neutral, thus providing for the

Now! Spray Paints, Lacquer, Enamel, Etc.

...with the new Alemite

"VERSATAL" PUMP



MODEL 7804-C for red lead, fibre coatings, other heavier type materials. Also available: Model 7805-C for lighter materials; portable Models 7800 and 7802.

• Here's something entirely new and different for high-pressure spraying! It's the Alemite "Versatal"—a heavy-duty air-operated pump that can reduce labor and material costs up to *50% or more.*

This revolutionary new unit feeds paints, roofing materials, and other heavy or light consistency materials at a uniform rate to as many as six spray heads located several hundred feet away. Can be loaded *without* stopping operations. Automatic agitation keeps materials constantly circulated *without* use of mechanical agitator. Pump is easy to clean.

Write today for free illustrated catalog!

Another Product of STEWART WARNER

ALEMITE

First in Modern Lubrication

Dept. F-6, 1835 Diversey Parkway, Chicago 14, Ill. In Canada: Belleville, Ont.

for an extra fine black, use

BLACK MAGIC

Single-bath black oxide process. Gives iron and all steels except stainless a rich black that won't rub off. Simple to work. Chemical reaction at 300° F. Penetrates .0001". Very tough and flexible; product may be formed after processing. Fine bond for paints and lacquers. Non-priority.
There are also BLACK-MAGIC baths for copper, brass, zinc, cadmium. Sample and the "Black Book," which tells all, sent on request.

SILCO

NEW GLASS-BASE METAL FINISH

Ideal ornamental and protective sprayed-on coating for stoves, heaters, exhaust pipes, typewriters, optical instruments, filing cases, etc. High corrosion and abrasion resistance. Beautiful matte and eggshell finishes in all colors. Spray it on and dry at 200° F.; then bake at 350° F. in any industrial oven. Non-priority. Sample on request.

BLACK-MAGIC
BLACKING SALTS
for
STEEL, IRON
COPPER, ZINC
CADMIUM

•

WITCH-DIP
WITCH-OIL
FINAL FINISHES

•

SILCO
PROTECTIVE
COATING

•

Cleaners
Wetting Agents
Acid Inhibitors
Heat Treating
Salts

•

MITCHELL-BRADFORD
CHEMICAL COMPANY

MODERN METAL FINISHES

2446 D Main St., Stratford P. O., BRIDGEPORT, CONN.

Midwest Field Office, 2651 W. Greenleaf Ave., Chicago 45

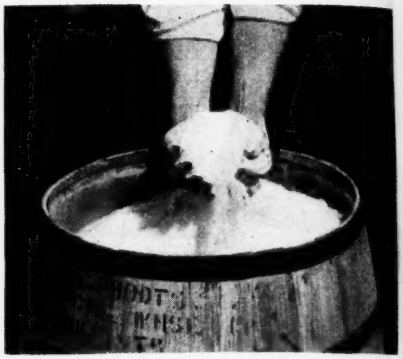
elimination of corrosion on metals or harm to the skin.

G-BEX 45-A is recommended for the cleaning and degreasing of floors, machinery, motors, equipment, and parts prior to finishing or assembling. It is said to be easy to use and may be applied with a brush or spray gun or by the dip method. It may also be used in standard emulsion degreasing tanks, either cold or heated. When the dirt, oil, and grease are thoroughly saturated, they can be removed simply by flushing or hosing with water. A trace of the residual compound is said to minimize rusting after the washing process.

G-BEX 45-A is available in 1-gallon cans, 7½ and 54-gallon drums.

"Troxide" Pickling Agent

A pickling agent for removing rust, scale, tarnish, and incrustations of cement and lime from metals, to be known as "Troxide," is now being marketed by Waverly Petroleum Products Co., Drexel Bldg., Philadelphia 6, Pa. The material is described as a dry, inert compound which is non-eruptive and non-inflammable. In addition, it is claimed to throw off no "acid-mist" or other toxic fumes which are pungent, corrosive, and harmful to workmen and machinery.



"Troxide" Pickling Agent

According to the manufacturer, Troxide attacks only the scale, not the metal itself, leaving a smooth, clean, and bright surface. The material may be used either hot or cold to clean and reclaim ferrous and non-ferrous metals. It is supplied packed in ordinary wooden barrels.

"ROBINSON'S ASSAYED"

Gold Plating Solutions

Are Nationally Endorsed

MADE BY A. Robinson & Son
131 CANAL ST. NEW YORK

Many Mahon Finishing Systems are so synchronized that the various finishing operations progressively START or STOP with a single control.

THE *Start* OF A NEW ERA IN *AUTOMATIC FINISHING!*

In wartime production, utility and durability of the finish have been the prime essentials. Future finishing operations, however, must take into consideration, also, the all-important factor of APPEARANCE. And like other production operations, finishing must be accomplished at the lowest possible cost—if predetermined selling prices are to be met.

Many concerns, in many different industries, have found Mahon Complete Finishing Systems the practical solution—fully mechanized, AUTOMATIC, coordinated systems that incorporate the newer and better features of faster, finer, safer, MORE ECONOMICAL finishing. You, likewise are invited to utilize the specialized knowledge of Mahon engineers.

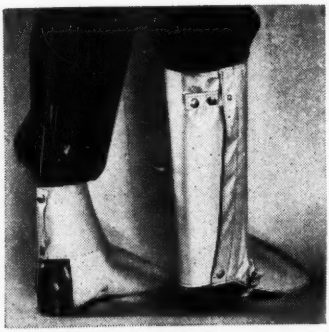
Address Inquiries to **INDUSTRIAL EQUIPMENT DIVISION**

THE R. C. MAHON COMPANY
DETROIT 11 *CHICAGO 4*

Manufacturers of Metal Cleaning Machines • Rust Proofing Machines • Hydro-Filter Spray Booths • Ovens of All Types • Filtered Air Supply Units • Hydro-Foam Dust Collectors—and Many Other Units of Special Production Equipment—including Complete Finishing Systems

Surety Sureseal Spats and Leggings

Protective leggings and spats of resistant coated fabric have been developed by the Surety Rubber Co., Carrollton, Ohio. Neoprene is used to impregnate and coat a lightweight closely-woven cloth, producing a silver-colored material which is said to resist acids, caustics, solvents, oils, fats, and greases.



Surety Sureseal Spat and Legging

The Surety Sureseal Spats and Leggings are amply cut to cover the shoe all the way to the floor. On the spat, a leather strap with buckle adjustment fits under the shoe and double-reinforced snap fasteners hold the cuff snugly to the leg. Two positions are afforded for snapping the fasteners in place to accommodate the fullness of tucked-in pants leg.

The legging includes a strap and snap fasteners, as well as a sewn-in flexible metal stay for holding the wrap-around at its full height of 14 inches. Both the legging and spat are designed for putting on quickly.

Fidelity Compounds No. 178 and No. 229

A line of compounds for keeping spray booths free from accumulated paint residues is now being marketed by the Fidelity Chemical Products Corp., 430 River-

CAPITALIZE
on the dependable day-after-day
performance of SPARKLER FILTERS
The design of the Sparkler horizontal plate insures consistently uniform, highest quality filtration of plating solutions at great economy in time, operation and filter aid. The thoroughness with which Sparkler Filters clean up and polish solutions of all kinds makes for smoother application and enhances the brilliancy of the finishes. Choice of all-steel, hard rubber, stainless steel or lead-lined construction.
Sparkler offers free filtration survey service through its conveniently located field engineers. Write for this service, or any special data.
SPARKLER MFG. COMPANY
254 Lake St., Mundelein, Ill.
SPARKLER HORIZONTAL PLATE FILTERS

DRIES BY AIR— WITH THE GREATEST OF EASE

UNICHROME*

AIR-DRY RACK COATING 203

"Swings" Your Toughest Plating Cycle

All you do is dip your racks in the handy open-end drum; hang 'em up to dry at room temperatures and there you are! All set with a tough, resistant insulation that will stand up to your *severest* solutions. Many shops are getting 500, and even 1000 cycles before recoating.

You see, new and improved synthetic resins are responsible for these outstanding properties of Unichrome Air-Dry Rack Coating 203. Constant research in selecting and formulating these resins makes sure that you get maximum rack protection and minimum recoating cost. Why not decide to see for yourself—with a trial order today? Write now to our nearest office for data and prices.

*Reg. U.S. Pat. Off.

PROPERTIES

Chemical Resistance—Excellent for all plating cycles.

Toughness—Withstands repeated flexing and shop handling—cuts cleanly and easily at contacts.

Drying—Dipped in container in which it is shipped and dried at room temperature.

Adherence—Excellent.

UNITED CHROMIUM, INCORPORATED

51 East 42nd Street, New York 17, N. Y. • 2751 E. Jefferson Ave., Detroit 7, Mich. • Waterbury 90, Conn.

TRY THESE OTHER UNICHROME MATERIALS

Unichrome Coating 202—a new rack insulation, similar to Air Dry 203 but which is force dried to obtain the extra adherence required in anodizing and hot, strongly alkaline solution.

Unichrome Quick Dry Stop-Off 322—for cyanide copper and other plating work requiring an extremely adherent stop-off.

Unichrome Quick Dry Stop-Off 323—for chromium and other plating work requiring a stop-off that can be peeled off after use.

Unichrome Resist—a solid insulating material for constructing composite racks, stop-off shields, insulating gaskets, etc.

side Ave., Newark 4, N. J. The line comprises two compounds designated as the No. 178 and No. 229.

For use in water-wash spray booths, Fidelity Compound No. 178, added in small quantities to the circulated water, is said to reduce the surface tension of the paint particles and ensure their thorough wetting. This action, it is claimed, aids in throwing the particles from the air stream, prevents them from adhering to the metal surfaces of the system and from clogging pump and piping, and facilitates their collection and removal. According to the manufacturer, the compound is mildly alkaline and has no corrosive effects.

Dry spray booths and surroundings areas may, it is claimed, be easily kept clean by coating with Fidelity Compound No. 229, which is described as greaseless and fireproof. It may be applied with a spray gun, brush, or trowel. The coating is said to remain moist for weeks and, when desired, may be readily removed with the adhering paint by means of a trowel or scraper.

"Steel Grip" Strapper's Glove No. 15359

To meet the need for a protective glove for operators of strapping machines used in the preparation of materials for overseas shipment, the Industrial Gloves Co., 746 Garfield Blvd., Danville, Ill., has developed the "Steel Grip" Strapper's Glove No. 15359 illustrated herewith.

The glove is made of a flexible, comfortable, seamless palm pattern with

FULL PROTECTION — LIGHT WEIGHT
LONG WEAR
NU-LITE
PLASTIC SLEEVES, GLOVES WORK APRONS

Provide full protection to workers from troublesome dermatitis induced by industrial irritants. Only 1/7th the weight of conventional protection garments — makes for wearer's comfort and freedom of movement—reducing fatigue.
NU-LITE sheds and resists water, oil, gasoline, strong acids, alkalis, degreasing and plating solutions.
Let us show you how NU-LITE's low cost protection features can boost production in your shop. Samples furnished for approval.

Safety Equipment, Production Aids and Packaging Specialties
NULITE PLASTICS
DEPT. PF VERONA, N. J.

FOUR IN ONE
Grinding and Polishing Machine
This type R machine is a combination of several types of grinding and polishing machines. It can be used for disc grinding—polishing—burring and surfacing.
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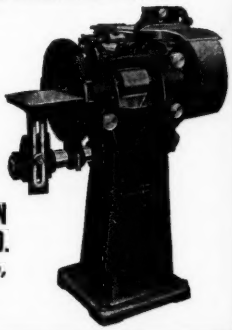

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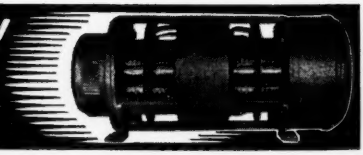
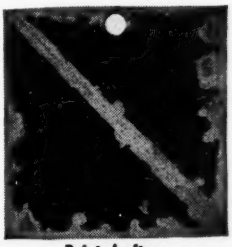
GREENFIELD, MASS.

BETTER PLATING, LESS COST!
"MGC" ELECTROPLATING EQUIPMENT
Write for Interesting Details TODAY!
MOTOR GENERATOR CORP., HOBART SQ. PF-45 TROY, OHIO



Peroline
PREVENTS RUST
PROPERLY CONDITIONS FOR PAINTING

Painted after
Peroline Protection



Painted after
Conventional Oil Coating

Both of these panels were vapor degreased and painted with High Bake Black Fender Enamel and exposed to Salt Spray. Note lack of paint failure at the diagonal scratch and at the edges of PEROLINE coated panel.

These photographs are positive evidence of PEROLINE'S merit. You can duplicate the demonstration in your own laboratory.

PEROLINE

- provides better rust protection for parts in transit, fabrication and storage.
- removes light blushes of rust and marks from sweaty hands—destroys or neutralizes chemicals that would develop rust under conventional oil coatings.
- produces a properly conditioned surface for durable paint finish when the oil phase is removed from the work with solvents or in a vapor degreaser.
- makes it possible to safely use a vapor degreaser in preparation for a durable paint finish.

PEROLINE, if applied to a clean surface, keeps it clean and leaves it properly prepared for finishing with no other treatment than to remove the oil phase by vapor degreasing or with suitable solvents or thinners.

The Technical Department of the American Chemical Paint Company will also gladly advise you regarding proper chemicals for your use in rust removing and metal cleaning both for war products and those for domestic use.

Send for PEROLINE *literature Department A-6*

MANUFACTURERS OF INHIBITORS AND METAL WORKING CHEMICALS

AMERICAN CHEMICAL PAINT CO.
AMBLER ACP PENNA.

Note—West Coast Plants may address inquiries and orders for prompt delivery to Leon Finch, Ltd., 728 East 59th St., Los Angeles, California.

extra palm patch of chrome tanned cowhide. The base glove is grain leather,

"Steel Grip" Strapper's Glove No. 15359

thus assuring a comfortable fit. The fingers and thumb are open at the ends to further increase flexibility and permit the easy picking up of tape, wire, small tools, and so on. In addition, the open back design of the glove provides for coolness.

The Steel Grip Strapper's Glove No. 15359 is made in sizes for men and women.

"Stik-Gum"

"Stik-Gum," a combination of active chemicals to be mixed with water and used in sealing machines for moistening water soluble adhesive surfaces such as gummed tape, labels, decals, and so on, is now being marketed by Service Industries, 2103 E. Somerset St., Philadelphia 34, Pennsylvania.

Stik-Gum is said to impart rapid wetting, spreading, and softening characteristics to the water, thus forcing the glue of the gummed paper down through the paper sizing into the fibers where it is speedily dispersed. This almost instant removal of the moisture from the glue causes it to take a quick set beneath the surface, thus producing perfect adhesion, it is claimed. The re-

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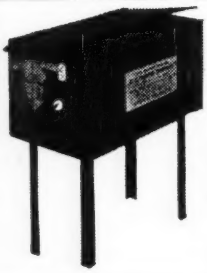

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McKeon's
Tin-Strip
Strips
Tin Without Damage to Base Metals.

sult is a tenacious weld of tape to paper that is said to be stronger than either the tape or the paper.

According to the manufacturer, the softening and spreading power of Stik-Gum enables labels to be stuck smoothly and firmly to metal, glass, and other hard surfaces. Stik-Gum is supplied in boxes of 24 convenient size capsules complete with directions.

Quadrafos (Sodium Tetraphosphate) Beads are the subject of a four-page bulletin released by the Technical Service Department, Rumford Chemical Works, Rumford 16, R. I. The bulletin describes the advantages and properties of these smoothly-rounded spheroids of brilliantly clear glass-like structure and their use as a detergent, water conditioner, dispersing agent, and dye assistant. Copy of Bulletin 310 free upon request.

"How Carborundum Serves Industry" is the title of a booklet published by The Carborundum Co., Niagara Falls, N. Y., the purpose of which is to tell a story in words and pictures of the history and the development of this firm. Uses of Carborundum grinding wheels, abrasive products, and refractories in the production of a wide variety of materials, including those for war, are covered in an interesting manner.

Copy of the booklet is available free to executives addressing requests on their company letterheads.

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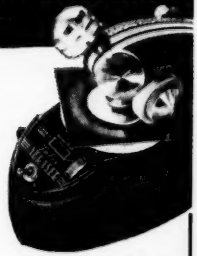

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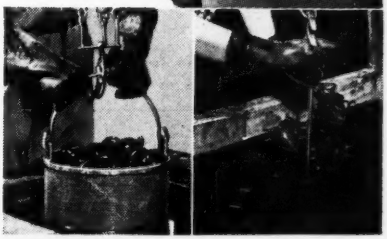

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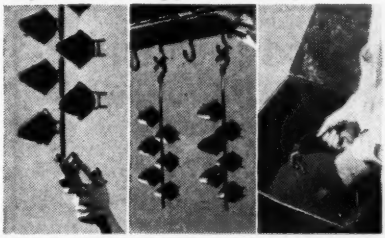

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American Airblast Equipment. An illustrated catalog published by the American Foundry Equipment Co., 525 S. Byrkit St., Mishawaka, Ind., describes a complete line of Airblast equipment, including rooms, cabinets, tanks, suction guns, nozzles and accessories. Copy free upon request.

Manderscheid Polishing Wheels. Bulletin 101 now available free from The Manderscheid Co., 605 W. Washington St., Chicago 6, Ill., illustrates, describes, and outlines uses of all kinds of polishing wheels, including muslin, canvas, sheepskin, bullneck, and felt wheels, as well as special purpose wheels.

"Metal Cleaning Before Brazing with Silver Alloys" is the title of a four-page illustrated folder issued by Kelite Products, Inc., 909 E. 60 St., Los Angeles 1, Calif., describing a scientific process for the cleaning of metal surfaces prior to low temperature brazing with silver alloys. Copy free upon request.

Torit Dust Collectors. Fifty per cent larger than the previous edition and containing nearly 50 new illustrations, as well as completely rewritten descriptive matter, a 24-page catalog concerning self-contained units for carrying away dust-laden air around grinding, cutting, and polishing wheels has been released by the Torit Manufacturing Co., 314 Walnut St., St. Paul 2, Minn. An outstanding feature of the catalog is a cutaway view of a Torit cloth filter unit which graphically illustrates the manner in which dust-laden air is handled inside the unit. New equipment covered includes a No. 88 suction tube assembly, No. 602-A dust collector, and FM and FM-A dust separators, as well as a No. 165-A dust collector which inocrporates in the filter assembly Owens-Corning Fiberglas insulation wool. Copy of Catalog No. 29 free upon request.

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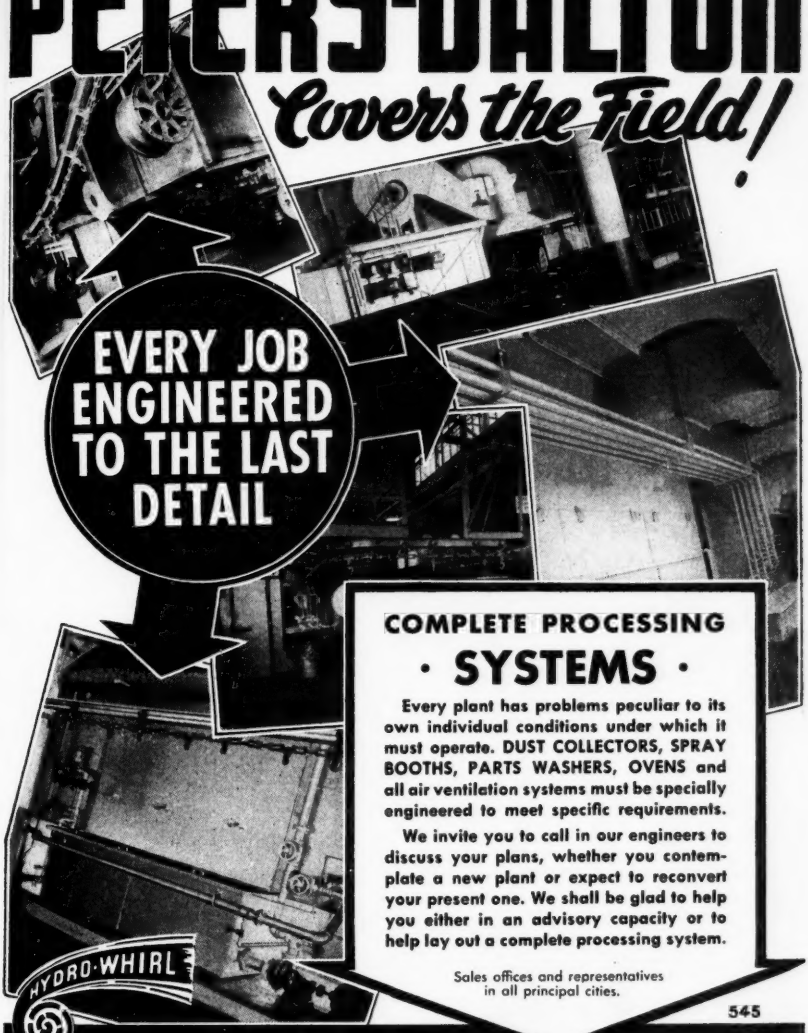

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